Commerce Report Says We're in Trouble

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The Commerce Department has advised the White House that the U.S. faces a continuing decline in the competitiveness of its high-technology industries, including computer hardware and software, semiconductors, fiber optics and robotics.

The argument that American high-tech firms are confronting increased competition from foreign countries, particularly Japan, is not new; the U.S. computer and semiconductor industries have been making the same claim for several years. The significance of the Commerce Department report, released last week, is that it was commissioned — in December 1981 — by the Cabinet Council on Commerce and Trade, which presumably will use the document as a basis for a concerted, White House-backed response to declining U.S. high-tech competitiveness.

'In terms of research and development spending, the report noted, overall, the U.S. has larger outlays than West Germany, Japan and France. But, Commerce said, those nations are raising their R&D financing, and U.S. government spending increasingly goes for military projects.'

In developing the report, the Commerce Department held a series of meetings with high-level executives of the computer, telecommunications, semiconductor and robotics industries in this

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NEWSPAPER

It Didn't Weather the Storm

Ten thousand gallons of water and five tons of air-conditioning equipment crashed down on Mazda Motors Corp. of America's IBM 4341 system when a storm lashed its Compton, Calif., data center. Story on Page 7.

NCR Mainframe Built On 32-Bit VLSI Chips

By Ed Scannell
CW Staff

DAYTON, Ohio — NCR Corp. last week brought out what it claimed is the first 32-bit mainframe for general-purpose business applications that incorporates very large-scale integration.

Labeled the NCR 9300, the system is the first to use NCR's compact 32-bit chip set and is small enough to fit on top of a desk.

The bread box-size system reportedly has twice the processing power but takes up seven times less floor space than NCR's I-9020 system at the same cost. A 9300 configuration that supports 10 to 14 users and is priced at $72,071 is the performance peer of a similarly configured Digital Equipment Corp. VAX-11/730 but costs 45% less, NCR claimed.

The 32-bit system's entry-level model carries a $24,235 price tag, while the high-end version lists for $125,000.

NCR also announced a remote diagnostics service for users of the new 9300 system.

The diagnostics service is modem-based, operating via telephone lines, and costs $1,187/year for users with a typical 9300 configuration. The company claims comparable on-site field engineering would be priced at $1,484.

With the introduction of the 9300, NCR President Charles Exley Jr. said the company's other mainframes will "require a repricing and repositioning which will be forthcoming," although he declined to say exactly when it would take place.

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Large Users to Bypass Phone Companies

By Phil Hirsch
CW Washington Bureau

Major customers of the nation's telephone operating companies may be migrating to "bypass" suppliers faster than most industry pundits and government policymakers have predicted, a survey that *Computerworld* conducted last week among a random group of large corporations and institutions indicates.

All but one of the seven users contacted — Xerox Corp., Bank of America, General Electric Co., Monsanto Co., MIT, the City of New York and Aeronautical Radio, Inc., which operates a leased-line network for the nation's major airlines — are actively involved in planning or building communications facilities that would bypass telephone company local-exchange networks. Each organization spends at least $50 million annually on domestic communications, and some spend more than twice that much.

All of the seven users are now doing business with other common carriers and/or interconnect (independent) terminal makers. Asked about their willingness to buy competing services and equipment from non-telephone company suppliers, several called the question irrelevant because they are already doing so.

A recent "Status Report on Near-Term Local Bypass Developments" from the Federal Communications

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Product Spotlight

Pursuers Hot on AT&T's Heels

By Bruce Hoard
CW Staff

AT&T is ducking bullets from a posse of challengers as it is thrust into a new age of unregulated communications competition. When the smoke clears, the reshaped U.S. common carrier market will stand in the ruins of its predecessor.

Stripped of its communications monopoly by the federal government, the world's largest corporation is fighting for its future. The Bell operating companies, which own and operate the local-exchange facilities, will become fully separated from AT&T as of Jan. 1, 1984.

Bringing the battle to Bell is a host of other common carriers that range from United States Transmission Systems, which offers private-line

(Continued on Page 11)

AT&T last week replaced the 1.5M bit/sec portion of its Dataphone Digital Service. Story on Page 6.

AT&T to License Videotex Patent

By Phil Hirsch
CW Washington Bureau

NEW YORK — AT&T has reportedly agreed to license its videotex display system on reasonable, nondiscriminatory terms, thus enabling the American National Standards Institute to proceed with development of a videotex standard.

The news came last week in an interview with Ansi's legal counsel, William H. Rockwell. Rockwell said he would advise Ansi's X3L2 subcommittee to continue its development of the proposed standard, known as the North American Presentation Level Protocol Syntax.

Until last week's announcement, NAPLPS' future was in doubt because the underlying technology is

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SPECIAL PUBLICATIONS
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Please address all correspondence to the appropriate department at Box 880, 375 Cochituate Road, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

OTHER EDITORIAL OFFICES & SALES OFFICES:

New York: Suite 7G, 401 East 80th St., New York, N.Y. 10021 Phone: (212) 570-2135

West Coast: 257 Lytton Ave., Palo Alto, Calif. 94301 Phone: (415) 328-8064.

Washington, D.C.: 800 National Press Building, 529 14th St. N.W., Washington, D.C. 20045. Phone: (202) 347-6718.

England: Bill Dunlop, Stephen Thomas, Reece Notman Assoc., 345 Gunnell Rd., Islington, London EC1V 1PEH. Phone: 01279 24151-6.

W. Germany: Erhard Uppenkamp, CW Publikationsverlag, Feydenheimer Pl. 6000 Munich 40. Phone: (089) 36-90-61. Telex: 521-5240.

France: Patrick Morel, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. Phone: 720 88 66.

Japan: Ide, Shohei Kurita, Computerworld Japan, 7-4 Shinbashi 1-Chome, Chuo-ku, Tokyo 104. Phone: (03) 531-0882. Telex: 252-4227 Ebihara H. Yamada, Tokyo Representative Corp., Yamaguchi Bldg., 2-12 Kanda Jimbo-Cho, Chiyoda-Ku, Tokyo 101. Phone: (03) 230-0167. Telex: 226860

Australia: Alan Power, Computerworld Pty Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 439-4133. Telex: SECCO AA25668.

Brazil: Ivo Magnoni, Data News, Computerworld do Brasil Servicos e Publicacoes Ltda. Rua Alcindo Guanabara, 25-10th Floor 20031 Rio de Janeiro, RJ, Brasil. Phone: (021) 240-8225. Telex: 21309 BCWCBR BR.

Mexico: Barbara Newell, Computerworld de Mexico, Oaxaca 20 1 Colonia Roma, Mexico City 7 D.F. Phone: (905) 514-6218, (905) 514-6309

Spain: Neil Keller, Computerworld/Espana, Cavanas, 15, Madrid 4. Phone: 226-23-09, 226-23-00, 226-23-08. Telex: o/n IDC es 760 1 Madrid

Denmark: Preben Engell, Computerworld/Denmark, Gammel Strand 30, 1202 Copenhagen K. Phone: 01-12-56-11. Telex: 27360 svedan.

Sweden: Bengt Mardvidh, Computerworld/Sweden, Nova Media AB, Vattugatan 15, 11520 Stockholm

Italy: Daniele Cordero, Gruppo Editoriale Jackson, s.r.l., Via Rosellini 12, 20124 Milano.

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ACLU Charges New Orleans, Jeff Parish With False Arrests From Computer Errors

By Jim Bartimo
CW Staff

NEW ORLEANS — The American Civil Liberties Union (ACLU) last month filed a class action suit charging the city of New Orleans and its police superintendent with the false arrest of several hundred people because of computer programming errors. Also named in the suit are Jefferson Parish, its sheriff and a number of unknown police officers and/or computer programmers.

But the New Orleans Police Department "acknowledges no false arrests," Calvin Galliano, assistant supervisor of the New Orleans police, said last week. A spokesman for Jefferson Parish could not be reached.

The ACLU's civil action asks the U.S. District Court of Eastern Louisiana to order the New Orleans Police Department and the Jefferson Parish Sheriff's Office to correct erroneous information contained in their computers.

The city of New Orleans and Jefferson Parish, which is a county adjacent to New Orleans, have separate but connected computer systems, according to Martha Kegel, executive director of the ACLU's Louisiana affiliate. Because the information in the computers is so often inaccurate, police officers assume the computer is "a little off" and make arrests of people whose descriptions only partially fit those of the suspect, she said.

"We're basically trying to get improvements in the training of people who operate the equipment," Kegel explained. But Galliano maintained that "our system provides adequate safeguards. We have good training and monitor our system well."

The New Orleans Police Department uses an IBM system that can transfer files of arrest with Jefferson Parish and City Hall, a city spokesman said. The ACLU has charged that inaccurate information is not removed from the files even when it is discovered.

The New Orleans police maintain, however, that outdated and inaccurate information is removed from the system. "We have adequate purge capabilities," Galliano said.

In addition, the ACLU's complaint stated, "Orleans and Jefferson parishes and their law enforcement personnel do not have clear and appropriate policies and procedures in place to program, manage and disseminate the information on their respective computers."

DP Check Lands Her in Jail

NEW ORLEANS — The official filing of the class action against New Orleans and Jefferson Parish says the suit is being brought by "Shirley Jones, individually, and on behalf of all others similarly situated."

Jones is reportedly a victim of alleged computer problems here. Booked twice in the past year and imprisoned once in Jefferson Parish, her first arrest came after a routine computer check by the state's Department of Health and Human Resources.

The computer check was performed so that Jones, a black mother of three, could accept into her home five nieces and nephews who would have otherwise been transferred elsewhere, according to the American Civil Liberties Union's (ACLU) legal complaint. The next day, Jones was arrested because her name was used as a pseudonym by Vera Davis, who was being sought on charges of theft and forgery since 1978.

Jones was imprisoned for 18 hours, the complaint stated, even though she was born on a different date, was six inches shorter and many pounds lighter than Jones. "However, the Jefferson Parish Sheriff's Office still contended she was the same person because their computer was always 's little off,'" the complaint stated. Charges against Jones were dismissed in April 1982.

Even though information about Jones' two bookings had been entered into the computer, she was subpoensed on the same charges last August. When she appeared at the Sheriff's Department to clear up the matter, she was again fingerprinted and advised to change her name to keep the same mistake from happening again, the complaint stated.

Martha Kegel, executive director of the ACLU's Louisiana affiliate, said the Jones case typifies the Police Department's computer problems. The police were so accustomed to inaccurate information that they assumed the computer was wrong and continued to arrest Jones despite incongruities between the computer description and Jones' description.

Moreover, a correction was never entered into the computer records, Kegel said.

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IN-LAWS

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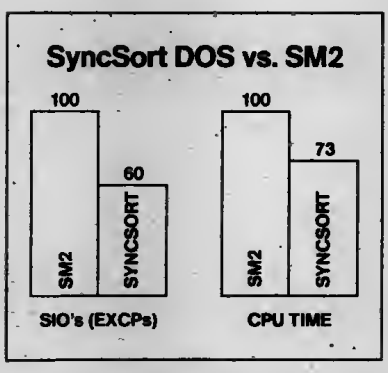

High performance computer without high performance sort program like bride without groom—expectation without fulfillment.

—Old Chinese Proverb.

* * * * *

You say you just got this brand-new 4331? It's got big blue eyes, great price-performance curves and nifty disk drives? Now you're thinking about marrying it to IBM's 5746-SM2 sort program?

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Predictions of DPer Shortages Came True

20/20 HINDSIGHT

By Paul Gillin
CW Staff

Programmers who made career plans based on predictions that appeared in *Computerworld* three to four years ago made pretty safe bets. The forecasts are still generally valid, the people who made them said when they were contacted recentiy, even though their individual predictions were somewhat different.

Pundits who foretoid a programmer shortage persisting into the next decade still stand by their predictions, although they said the recession has rendered them less dire. In October 1980, the National Science Foundation's (NSF) "Science and Engineering Education for the '80s and Beyond" projected that approximately 550,000 jobs for programmers, systems analysts and other computer professionals would open in the U.S. between 1978 and 1990. The supply of college graduates in those fields would be no more than 157,000 during those same years, the report predicted.

The availability of work has since led many students educated in other fields to enter computer work, according to Dr. Alphonse Buccino, deputy director for science education at the NSF and one of the report's authors. That, combined with the recessionary squeeze, has eased the shortages somewhat.

"The shortage is not quite as severe as the numbers indicate, but that doesn't mean there isn't a problem," Buccino maintained.

Software productivity tools have failed to alleviate the programmer shortfall, Buccino said. In fact, they may make it worse.

"It's like the jetliner, which not only met a need that was felt in 1958 but created its own demand," he said. "More and more individuals are finding applications."

Business has responded to some of the recommendations made in the 1980 report, Buccino said. Among those were suggestions that industry provide research facilities and offer sabbatical arrangements whereby industrial engineers and university faculty could exchange jobs to broaden their experience. The report also concluded that universities should allow faculty members more leeway to supplement their incomes.

"Private industry has taken an increased interest in educational institutions," Buccino said. In fact, the 14th annual report of the National Science Foundation is titled "University-Industry Research Relationships."

Application programmers will not be threatened by end-user-manipulated software, timesharing and turnkey systems, said John K. Lady, chief of the Computer Services Division at the National Telecommunications and Information Administration in March 1979. Turnkeys will be oversold as solutions, Lady said at the time, and applications programmers will still be in demand for their specialized skills.

Application generators and high-level programming languages have transferred more development responsibility to end users in the intervening years. But Lady maintained that applications programmers are in no immediate danger.

"The job outlook for application programmers looks good for the rest of the decade," Lady said. "There is not yet any general-purpose software," that threatens specialized applications.

Time-sharing has become a valuable tool in specialized areas, Lady said, but it still poses no major threat to the general programmer. As for application development tools, their impact has been limited. "I haven't seen any programmer productivity tools that are very good," he said.

Lady now predicts that programmers will need to emphasize their analytical ability over coding skills. "They will work with new packages such as data base management systems, file-access utilities and report writers," he said. "Application programmers will still be needed to look at specific jobs and take advantage of all the tools that are available."

More Pessimistic Forecast

A less optimistic forecast was expressed in a Dec. 10, 1979 reader commentary. Micheie Landon, then a technical supervisor of the Hartford Insurance Group and now manager of an application group at the University of Massachusetts at Amherst, asked, "Will we [programmers] go down in history as the profession that created and destroyed itself in 25 years?"

Landon said application generators and nonprocedural languages would create a trend that "will unfortunately but unavoidably eliminate programmers."

Perhaps the 25-year time frame was too short, Landon said recently, but programmers are still threatened by these tools. Rather than losing their jobs, she said, the programmer's role will change.

"Everyday application programmers will eventually lose a lot of their importance," she said. "Their role will be as consultants — teaching people how to use packages, minicomputers and micros."

Landon contradicted recent forecasts that predict that programming aids will actually increase the demand for new applications. Users will eventually take over most of their own developmeot needs, she maintained. "Programmers still have to get more diversified. Those that are not technically oriented will have to learn to communicate."

N.Y. Recruiters Say Job Market Loosening Up

By Bob Johnson
CW New York Bureau

NEW YORK — If the New York metropolitan area is any barometer of economic conditions, then the back of the recession has been broken and the outlook for data processing positions in the near future is good.

DP personnel recruiters here report that positions in nearly all computer-related areas are becoming more plentiful as 1983 progresses. And salary offerings are increasing as well.

Although the DP job market in New York did not suffer as badly from the recession as did other areas of the country and other industries, the fact is that many positions that which would have been filled in better times were left open, according to William Borrelli, president of the recruiting firm William Harris Associates here.

The situation is changing, Borrelli maintained, adding that the DP job market is "loosening up." According to Borrelli, "Companies are coming to realize that they should fill those positions which were left vacant six months to a year ago. Prior to what is happening now, many firms maintained plans to hold back on new hiring unless it was extremely necessary. I have seen over the last three months companies now filling jobs that were open since the beginning of the last quarter of 1982."

Borrelli, who has been in the DP job market for 15 years, said he is witnessing "active interviewing and hiring" in positions that span all areas of DP. Specifically, he has detected a noticeable upswing in the number of placements and inquiries from DP technicians, especially from those outside the New York area. He attributed this interest to the poor economic situations that persist in other parts of the country.

"I've gotten a tremendous response from other parts of the U.S. DPers feel that because there is such a large concentration of users here, a proportionate amount of jobs will be available. And in some cases, it's beginning to happen again," he said.

Borrelli also pointed out that salaries at all levels of DP are on the increase. He said that in software support, for example, someone with about seven years of experieoce who is currently earning $42,000 can expect his market value to be worth in the $50,000-a-year range now.

Robert Haif, president of Robert Half International, Inc., said there has been definite growth in the number of "orders" his company has taken for DP jobs within just the past two months.

Bonnie Kaplan, a placement manager for Robert Half in New York, said that although there has not been a "dramatic" change in the number of available jobs since 1982, there has certainly been an "upturn."

Kaplan noted that companies are beginning to replace vacated positions and are also expanding their DP operations as "more and multiple" positions become available.

"One positive indicator is the interview procedure," Kaplan maintained. She pointed out that clients are currently taking less time for the hiring process. "What took 3½ weeks to finalize in 1981 takes 2½ weeks now," she said.

Low Point

Steve Joffe, the manager for Source EDP here, said many New York-based companies are now at a "low point" in DP staffiog because the metropolitan area was hit by the recession in the spring of 1982, a bit later than the rest of the country. Joffe said that the job market is indeed becoming stronger and that economic indicators, such as the steady positive actions in the stock market, are giving companies the confidence that recovery is "real."

This confidence, coupled with a need for good DPers, is evidently spurring companies to hire once again, Joffe noted. "We hit the worst, and we are now coming back. The worst time for us was the last quarter of 1982. but now things are turning around. I can't quantify it right now. It's just a feeling — but companies are definitely expressing a need for DPers again," he stated.

Opening fastest are positions in the highly technical areas, Joffe said. By and large, however, Source EDP here is seeing a "much greater diversity of positions" than it has in the recent past, he added. Management jobs will also open up strongly again, Joffe predicted, but these high-level spots traditionally take longer to open because they are usually related to a DP expansion situation.

Joffe also said that until recently, many DPers were reluctant to seek new jobs, even if they were dissatisfied with their present positions, because few companies were able to offer good DP positions during the recession. Now, Joffe is seeing an influx of both job applicants and openings in numbers that he described as having "never been so great." According to Joffe, "There won't be a running inflation of jobs, but it will be better and better."

Bruce Neuman, president of the recruiting firm Fairon-Rambeau, called the current job situation "tremendous." He said that companies are opening up jobs "like crazy," chiefly because of the stock market's five-month high and other positive economic indicators.

Financial Incentives Urged to Hike DP Output

By Tom Henkel
CW Staff

Financial incentive programs similar to those used to reward top corporate executives can boost productivity dramatically in the DP department, according to Dr. Howard A. Rubin, a computer science professor at City University of New York's Hunter College who also runs a productivity consulting business based in Stamford, Conn. Most effective are incentive programs that offer DPers at least $500 to $600 a year in bonuses.

When financial incentive programs are accompanied by other productivity tools, such as hardware and software enhancements, DPers can potentially produce seven times more work, he claimed.

Rubin, however, warned that while financial incentives can be beneficial, they cannot compensate for poor management or unpleasant working conditions.

Behavior modification is the key to motivating the DP staff, Rubin maintained. An incentive program that rewards the entire staff, typically twice a year, for their combined performance promotes a team effort that puts pressure on each employee to produce more. That approach is more effective than the competitive approach of rewarding only top producers, Rubin contended in a recent interview.

"You will have high achievers in every organization. This plan is aimed at the average and below-average employees," he explained.

Moreover, the researcher said, the financial incentive program also appears to help DP managers retain new entry-level employees, who traditionally job-hop to boost their salaries.

Ideally, employee bonuses should range between 2% and 10% of the employees' average salary, Rubin noted. However, they should not exceed 10% of the employees' salaries. Past the 10% mark, the incentive program becomes less advantageous to the company, he said.

Paying attention to the people costs in the DP department offers pay back that is higher than any productivity tool on the market, Rubin continued. Many firms make the mistake of buying hardware and software that are billed as productivity boosters. If managers fail to consider the staff's attitude as an element in the productivity equation, those products often fail to live up to their full potential, Rubin said.

Measuring Productivity

But measuring an employee's productivity is not an easy task. Improved productivity, Rubin explained, occurs when the DP department is providing better service to its customers — the in-house departments that depend on the DP department to provide information and services. The real measure of productivity entails meeting deadlines and providing quality software in a more cost-effective way, Rubin said.

Aside from cutting costs and improving service, incentives help managers understand what the information services department actually does.

"Measurement by itself does not supply the motivation for productivity improvement. By analogy, an overweight individual may weigh himself every day, but not take any action," Rubin said.

"I don't believe financial incentives alone can tap all 400%," Rubin said, referring to the percentage which he thinks employees are capable of increasing their performance if motivated properly.

How to Rate Productivity?

How can the information systems manager rate employee productivity? According to Dr. Howard A. Rubin, the best performance measurement technique is partly mathematical and partly common sense.

Productivity is a combination of lowering the unit cost of products (information services and applications in this case) and maintaining an acceptable quality level and delivery schedule, Rubin explained.

Rubin contended that DP employees should be rewarded according to how well they perform as a group. That translates into a bonus for each employee in the DP department equal to the group's performance times its improvement over last year.

The departmentwide performance rating can be quantified as a number between zero and one, Rubin said. For example, if the DP staff produced 75% of its work load within 10% of the company's standards for quality and timeliness, the employees would receive a zero rating. If they managed to produce 85% of their work within 10% of company standards, they would receive a .5 rating. The top rating would go to the DP staff that produces 95% of its work and still remains within the 10% standard.

That productivity rating is compared with the cost of delivering the same year's unit costs (in current dollars) divided by projected unit costs for this year minus one.

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Large Users Plan to Bypass Phone Companies

(Continued from Page 1)

Commission predicted that it will take three to five years for bypass vendors to become credible competitors of the telephone company. One reason: skepticism among prospective users.

"A number of respondents expressed doubts about the ruggedness and reliability of proposed local bypass systems," the FCC said, while others contended that "much of the current rush to local bypass was the result of unwarranted claims."

Despite its stance on user skepticism, the status report listed some 40 corporate and institutional telecommunications users that have installed or plan to install bypass facilities. Twenty-five of those organizations have systems already in place or will begin construction within a year.

Moreover, the report pointed out that a relatively few business and institutional telecommunications users account for a relatively large share of telephone company revenues: "AT&T claims that 5% of its customers generate 63% of its revenues." An even more dramatic example is provided by New York Telephone Co.; "more than one-third" of New York Telephone's revenues are generated by one-third of 1% of its customers, all of whom are located in Manhattan.

It is probably not accidental that Merrill Lynch & Co., in collaboration with the Greater New York Port Authority and Western Union, Inc., is now building a fiber-optic-based bypass network connecting the lower Manhattan business district with several neighboring business districts and with a "teleport" on Staten Island, where a number of private and public satellite earth stations are under construction. The New York teleport network will have a 96-fiber backbone trunk able to carry 200M bits per second on each fiber.

New York is also the place where Manhattan Cable TV Co., in competition with the telephone company, has been transmitting two-way voice and data signals for several years among business locations.

According to Dr. Jerone Lucas, president of Telestrategies, Inc., a McLean, Va.-based consulting firm that follows bypass closely, about 10 other cities are now planning teleports, and two — Columbus, Ohio, and Dallas — have teleports under construction. Meanwhile, an Atlanta cable TV network is providing local distribution for Isacomm, Inc., a reseller of satellite communications services, and in Omaha, Neb., Cox Cable TV is doing likewise for MCI Communications Corp.

At least 10 of the nation's 30 largest cities now have two-way cable TV systems in place or under construction, Lucas said, noting that the operators in Nashville, Tenn., Portland, Ore., and Dallas are promoting their channels to telecommunications users.

Lucas believes several cities will have bypass facilities up and operating before the end of next year. Aside from cable TV, there will be data-only digital termination systems, voice-only cellular mobile radio, plus private microwave and optical fiber point-to-point links that handle both kinds of traffic, he predicted, adding that by the end of 1984, there should be enough systems and users "to make bypass credible."

Will New Access Charge Plan Encourage Users to Bypass?

By Phil Hirsch
CW Washington Bureau

One question raised by the Federal Communications Commission's (FCC) new access charge plan [CW, March 7] is whether it will encourage users to bypass their local telephone company networks. The question is pertinent because many business telecommunications users, especially the larger ones, are seriously considering bypass alternatives, and a number of bypass vendors have begun hawking their wares.

The FCC plan drastically alters the way end users of the long-distance telephone network pay for access to that network. This could have a significant impact on the future viability of bypass services.

However, the present version of the access charge plan is not necessarily the final one. The National Association of Regulatory Utility Commissions has already taken the decision to court, and others may do likewise.

What does the new access charge plan mean? Today, part of what each interstate carrier collects from a user is given to the local telephone company to reimburse it for providing access facilities — terminal equipment (if leased from the telephone company), inside and outside wiring and a portion of the switch that terminates the user's local loop.

Beginning next Jan. 1, however, the user will pay much of the charge for these facilities directly to the telephone company. Or, more accurately, he will pay most of the Non-Traffic-Sensitive (NTS) charges allocated to local telephone company-provided long-distance access facilities. In 1984, the total bill for these charges will be about $8.5 billion per month, or roughly $8.50 per line monthly, the FCC said.

Initially, business users will pay an additional monthly charge of at least $4 per line to reimburse local telephone companies for providing access to long-distance circuits. The remainder of the reimbursement will be paid in 1984 by the interstate carriers, but over the succeeding five years, it will be added gradually to the direct charge levied on the end user.

Analysis

Those hit hardest by the increase may be users with heavy traffic loads. Not only do they have more lines, but they also tend to employ dedicated rather than dial-up access circuits. Users of the former facilities are now paying far less than users of the latter for interstate network access, the FCC said, because the telephone industry's present cost allocation scheme, which was established by the carriers rather than the FCC assigned virtually all of the access costs to switched offerings such as Message Toll Service/Wide Area Telecommunications Service (MTS/Wats).

Under the FCC's new plan, however, all business users who lease lines from the phone company will pay a minimum flat rate charge of $4 per line per month (residential users will pay at least $2 per line per month).

All of this suggests that there will be growing interest in alternate facilities that bypass the local exchange network (and the $4 rate hike). However, the shift of local access charges from the interstate carriers to their customers may cause a compensating reduction in interstate message charges.

The FCC expects this to happen; it pointed out in the recent order that heavy users will find message rates "dramatically reduced," which it said will make bypass "a less desirable option."

Even if the decline in interstate rates does not completely offset the increase in local exchange rates, users will not necessarily migrate en masse to bypass services. For, as the FCC pointed out in a "Status Report on Near-Term Local Developments," users considering bypass weigh a number of factors before deciding.

AT&T Offers TDC Service For Voice, Data, Facsimile

WASHINGTON, D.C. — AT&T has begun offering wideband Terrestrial Digital Circuits Service (TDC), which was authorized by the Federal Communications Commission last week despite objections from phone company competitors.

TDC, a 1.5M bit/sec point-to-point service for high-volume business and government communications users, replaces the 1.5M bit/sec portion of Dataphone Digital Service (DDS). TDC circuits can carry voice, data and facsimile transmissions.

The new service "can be particularly useful to large business customers who have their own private-line telecommunications networks and who need a mixture of voice and data transmission channels," a spokesman for AT&T said.

"It also can be used to provide access lines to AT&T's high-speed switched digital service, which is used to provide video teleconferencing and data transmission."

The TDC tariff approved by the FCC last week establishes new rates for 1.5M bit/sec service, increasing rates for shorter circuits up to about 100 miles and lowering long-haul rates. For example, a short-haul customer that paid $2,180/mo for a 30-mile circuit will now be charged $2,855; a long-haul customer that paid $62,075/mo for an 800-mile circuit will pay $26,285.

AT&T had delayed the effective date of TDC (see earlier story on Page 18) because of objections from competitors, who are chiefly upset about a requirement of the TDC tariff that all terminals connected to TDC channels must utilize network channel terminating equipment (NCTE) obtainable solely from the phone company.

AT&T Agrees to License Videotex Patent

(Continued from Page 1)

the subject of a patent application filed by AT&T's Western Electric [CW, Feb. 21]. Ansi rules allow patented technology to be standardized, but only if the patent owner agrees to license the patent to others on reasonable terms.

AT&T had agreed in general to do this but had balked at making a written commitment until assured by the U.S. Patent Office that it had a valid patent claim, a process that would take several months.

Tom Hastings, chairman of X3L2, said his group had to have the commitment before May 21 or work on NAPLPS would be delayed. It now appears that X3L2 will be able to complete a draft NAPLPS standard by the end of May, its original objective. This draft will then have to be considered by higher level Ansi groups before being adopted, a process that will take several months more.

Not every one agrees that AT&T's refusal to state its licensing terms immediately and in writing was based on uncertainty about the patent claim. Some think American Bell, Inc., which is in charge of marketing AT&T's videotex products, was trying to frustrate competitors.

"AT&T knows that its competitors won't make a significant investment in NAPLPS until they are sure they won't have to pay an arm and a leg for use of the technology," Bill Frezza said last month. Frezza heads a team at General Instrument Corp.'s Jerroid Division, which is developing an NAPLPS-compatible terminal family.

Canada also has a big stake in NAPLPS, since the proposed Ansi standard is based largely on Telidon, a videotex display system developed and promoted by the Canadian government at a cost of several million dollars.

Storm Demolishes IBM 4341

Destroyed Data Center Up A Week Later

By Jeffry Beeler
CW West Coast Bureau

COMPTON, Calif. — A Japanese automaker temporarily lost one of its two U.S. data centers late last month when a roof collapsed during a fierce Pacific storm and smashed the firm's entire hardware configuration into scrap metal.

The cave-in sent 10,000 gallons of flood water and five tons of air-conditioning equipment crashing down on an IBM 4341-based system owned and operated by Mazda Motors Corp. of America.

Although it caused no deaths or injuries, the Feb. 27 disaster did bring to an abrupt standstill a data center that supplies all Mazda's central computing services in 31 states.

For roughly a week, the wrecked and rain-soaked installation remained totally idle while Mazda's end users in the field reverted to manual methods of doing their major applications.

But by March 3, just four days after the cave-in, the company had already begun transferring its shattered central computing operations to a makeshift data center situated just 60 feet from the site of last month's devastation. Four days later still, the firm had regained all its former information processing capabilities and had returned to business as usual, according to Mazda's vice-president of DP, Harry Linnell.

Credit for the automaker's speedy disaster recovery goes partly to a local specialty construction firm known as Computer Facilities, Inc., Linnell said. Between Feb. 28 and March 3, Computer Facilities transformed 1,500 square feet of Mazda's conventional business office space into a fully operational DP room, complete with raised floors, air conditioning and all the other physical prerequisites of modern computing.

Linnell also credits the rapid restoration of his company's information processing facilities to a Sherman Oaks, Calif.-based hardware dealer known as El Camino Resources Ltd. For more than 48 hours beginning on March 1, the El Camino dealer combed the entire continental U.S. in an effort to find replacements for the 16 major pieces of IBM hardware that were demolished during the Feb. 27 roof collapse.

By March 3, all the necessary replacement equipment had been found and bought, shipped from six major locations throughout the U.S. and arrived at Mazda's makeshift data center here in Southern California, Linnell said.

Backup Saved Data

A third factor contributing to Mazda's quick disaster recovery was the company's own policy of maintaining both on- and off-site backup copies of all its key files. Although all the firm's IBM 3330, 3350 and 3380 disk systems were soaked and flattened beyond repair, the automaker escaped the calamity without losing even a shred of its business data, Linnell said.

The reason is that Mazda routinely duplicates its critical files on backup disk packs and then stores the extra copies in a concrete vault housed in the same building as the data center. Both the vault and its contents survived the roof cave-in intact. "If we hadn't taken the precaution to create backups, I'd probably be out there now looking for another job," Linnell said.

All in all, Mazda seems to have emerged from the recent destruction of its data center with comparatively few scars. During the week when its central computing facilities were entirely out of commission, the firm's manual backup procedures were reportedly able to maintain all the organization's key business activities at a near-normal level of performance.

"But if the interruption of our central processing operations had continued for longer than a week, we would probably have begun to see a slowdown in the delivery of new vehicles to our dealer showrooms," Linnell conceded.

Built around a 4M-byte IBM 4341-L2 running VSE, Mazda's West Coast data center here serves as the hub of a far-flung telecommunications network encompassing four parts depots, five ports and 400 dealers in 31 states. Like the automaker's other U.S. data center on the East Coast, the Los Angeles area installation controls inventory, allocates vehicles, monitors parts distribution and processes warranties for all the users within its assigned region.

For the most part, the western data center and its IBM 3705-based telecommunications network operate uneventfully. But late last month, serious trouble developed when a storm drain on the facility's roof became clogged with debris and buckled under the water's weight during one of Southern California's heaviest recorded rainfalls.

In addition to bombarding the hardware below with two 5,000-lb air-conditioning condensers and a tidal wave of accumulated rainfall, the cave-in left a 20-ft by 45-ft hole in the center's roof.

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Desktop Mainframe Built With 32-Bit VLSI Chip Set

(Continued from Page 1)

Besides the 9300 introduction, NCR also announced it is adding a "specialized sales force" to its U.S. marketing organization that will deal exclusively with large organizations and institutions.

The 9300 reportedly can run all programs written for the company's I-Series systems. The miniature mainframe can also communicate with the company's recently introduced Decision Mate series of microcomputers through the firm's Decision Net local-area network, a spokesman said.

NCR attributed the 9300's 7½- by 17½- by 25¾-in. size in large part to the first-time use of its NCR/32 chip set. The dime-size central-processor chip, which contains over 70,000 transistors, has the same electronics contained on 10 11-in. by 14-in. boards used in the firm's I-9020 series.

The three other boards comprising the chip set contain an address translation chip and two systems interface chips that would allow other manufacturers to integrate the chip set into their own systems.

In addition to reducing the system's size, the chip set is also responsible for making the system 10 times more reliable and requiring 90% less power than mainframes in the I-Series, the spokesman for NCR maintained. He also attributed the system's microinstruction execution time of 150 nsec and its virtual memory fetch cycle time of 600 nsec to the chip set.

At $24,235, the entry-level 9300 consists of the NCR/32 chip set, 1M byte of memory, a Link Level Communication Subsystem that supports seven asynchronous communications lines, four I/O subsystems for peripheral attachment, microcode and system utilities.

The bread box-sized NCR 9300 plugs into a standard 120V outlet, does not require heavy-duty wiring and needs no special air conditioning or humidity controls, NCR claimed.

Also included in the base price is the newly announced Interactive Transaction Executive (ITX) operating system, which NCR claimed provides a new way of linking transaction-based high- and low-order processing. The operating system permits industrial, retail and financial terminals to swap information with each other, according to the spokesman.

Because the 9300 is expected to play an important role in NCR's distributed data processing strategy, the vendor has equipped the mainframe with communications interfaces for IBM's Systems Network Architecture/Systems Data Link Control, IBM's Binary Synchronous Communications and X.25.

The company has developed a proprietary memory scrubber that scours the chip set's 4M bytes of processor memory every 16 seconds. The memory scrubber "virtually eliminates" the possibility of double-bit errors by correcting any transient single-bit errors automatically without involving the CPU, the spokesman said.

By adding an optional computational chip to the basic chip set, the 9300 might also be used for scientific applications, the company noted.

The 9300 can be leased for $950/mo on a three-year plan, the vendor said from 1700 S. Patterson Blvd., Dayton, Ohio 45479.

Commerce Report Says U.S. in Trouble

(Continued from Page 1)

country. Summarizing the findings of its study, which singled out nine separate industries, Commerce said that:

- High-technology industries are vital to the U.S. economy for a number of reasons, particularly in that they provide productivity improvements that are essential to a rising standard of living.
- National security depends upon the technology-intensive industries, both for sophisticated items that are essential to modern weapons superiority and for a strong and flexible industrial capability for future contingencies.
- The U.S. must rely on its strongest industrial sectors, for instance high technology, to meet increased competition in world markets.
- Over the last 12 years there has been a decline in the international market position of U.S. high-technology industries from a position of dominance to one of being strongly challenged. Market share for the high-technology group and for nearly all individual industries has fallen.
- If present trends continue, the U.S. can expect a further decline in the competitive position of U.S. high-technology industries.
- Foreign government industrial programs, particularly industry targeting, have adversely affected U.S. high-technology industries and will, if trends continue, place U.S. business at a disadvantage, even with an ideal environment for high technology within the U.S.
- The major technological challenge to the U.S. is from Japan. Now limited to a few high-technology sectors, this challenge can be expected to broaden in the future.

"The United States maintains an absolute lead in overall technology," the report noted.

The study added, however, that "there has been a decline relative to our major competitors in a significant number of U.S. high-technology industries."

Turning to the computer hardware and software, semiconductor, fiber optics and robotics industries in detail, Commerce reported that in a number of industry areas the U.S. has been surpassed or nearly equaled by the technological advances of Japan.

Development Risks

In discussing the environment for technological development, Commerce concluded that U.S. high-technology firms in some cases face higher capital costs and face more risks because they lack the government support found in other countries and because they have less favorable access to funds than their competitors in other countries such as France and Japan.

In terms of research and development spending, the report noted that, overall, the U.S. has larger outlays than West Germany, Japan and France.

But, according to Commerce, those nations are raising their R&D financing, and U.S. government spending increasingly goes for military projects, whereas most foreign government-sponsored R&D "focuses on areas of potential commercial significance."

The study also noted that those same competing nations are, on a percentage basis, increasing the numbers of scientific and technical personnel at a greater rate than the U.S, where the situation is worsening because of "a noticeable 'graying' of America's engineering work forces" and because of the fact that high private-sector salaries rob the universities of the faculty needed to train the next generation of high-technology workers.

Congressional Resolutions Mark Sharansky's Sixth Year in Prison

WASHINGTON, D.C. — Last Tuesday marked the sixth anniversary of the arrest and imprisonment of Anatoly Shcharansky, a Russian computer scientist and leader of a Moscow human rights movement who was charged with spying for the U.S.

The occasion was marked here by Congressional resolutions directing the White House and State Department to work toward Shcharansky's release and emmigration to join his wife in Israel. More than 200 congressmen and senators have co-sponsored the resolutions.

Arrested March 15, 1977 and accused of spying for the Central Intelligence Agency and with spreading anti-Soviet propaganda, Shcharansky was sentenced to 13 years in prison and hard labor. The guilty verdict was returned on what the resolutions termed "trumped up charges," despite a statement from President Carter denying that Shcharansky was an American agent.

Since then, according to information reaching the West from his family, the computer scientist's health has deteriorated. In addition he staged a hunger strike from September 24, 1982 until January 14 of this year protesting the Soviet authorities' refusal to allow him family visits.

The House resolution, which cites Shcharansky's "harsh treatment, including isolation, severe cold and inadequate food," mirrors the companion Senate measure in calling for the president and Secretary of State to press the Soviets to release Shcharansky and to deliver the resolutions to the Soviet ambassador.

Corrections

In "File-Aid, Abend-Aid Out" [CW, Feb. 21], it was incorrectly reported that Compuware Corp.'s File-Aid runs under DOS. The product is available only under OS.

The price listed for IO Corp.'s new interface, the IO 901A [CW Feb. 28], should have been listed as $3,995. Also, the IO 901A is interfacing a 2,400 bit/sec bisynchronous line to a 1,200 bit/sec asynchronous line, not 24K to 12K bit/sec as was published.

Prime to Skip NCC This Year

NATICK, Mass. — Prime Computer, Inc. will not be at the National Computer Conference when it opens May 16 in Anaheim, Calif. The company "took a real hard look at [its] trade show strategy and decided to stay home" from NCC, a spokeswoman explained last week.

Prime will instead concentrate its trade show efforts and money on more focused shows, such as those pertaining to office automation and computer-aided design and manufacturing, she said.

Prime denied that dropping out of NCC had anything to do with corporate budget tightening. "We'll spend as much as before, just in different areas," the spokeswoman said. "The generic trade show just isn't worth it."

The firms that dropped out of NCC last year included Hewlett-Packard Co., Pansophic Systems, Inc. and Chromatics, Inc.

Suit Could Imperil Future Of Voice Store-and-Forward

BOSTON — The future of voice store-and-forward systems made by Wang Laboratories, Inc., IBM and Rolm Corp. may be in jeopardy if a "test case" lawsuit filed by VMX, Inc. against Commterm, Inc. is successful.

The legal complaint asks that Commterm suspend marketing of its voice store-and-forward system because it violates VMX's newly awarded patent. The suit also asks that an assessment of damages be made to award VMX (formerly ECS Telecommunications, Inc.) an as yet undetermined sum of money. The sum is likely to be based on a "reasonable royalty," according to VMX's patent attorney, Jerry Mills of Baker, Miller, Mills & Murray, a Dallas law firm.

VMX and Commterm sources said the two firms are currently negotiating out of court. "If they don't come to an agreement, Commterm will go to court to protect its position," said Bob Murray, Commterm's director of marketing. "It is our hope that it can be settled without going to court."

If negotiations fail and VMX is successful in its legal action, Commterm's voice store-and-forward system could be forced off the market. But Murray maintained that Commterm's current users will not be penalized if this comes to pass.

While Mills had no comment about future action against manufacturers of voice store-and-forward systems, VMX Marketing Director Jeff Jenest said that if the suit against Commterm is successful, suits seeking to remove other systems from the market are likely. "You could call this a test case," Jenest said.

VMX filed the suit only 15 days after receiving broad patent rights on Feb. 1 to 51 individual design facets of its voice store-and-forward system. VMX filed for the patent in November 1979.

"There are 51 claims in the patent," according to Mills. "A claim is a one-sentence definition of what that patent covers. It's possible to sue on one claim or all 51. We're suing Commterm on all 51."

In related news, Commterm signed a marketing agreement with the UK telecommunications firm Plessey Company, Ltd. to provide a voice messaging system for Plessey's private branch exchange (PBX). Plessey has been sued by Rolm Corp. on copyright infringement and other charges (story on Page 101).

Commterm has a similar marketing agreement with Anaconda-Ericsson, and "we are close to announcing an OEM agreement with another major PBX manufacturer," a Commterm spokesman said.

RCA Customers to Get $28 Million Rebate

WASHINGTON, D.C. — Twenty-eight million dollars will shortly be distributed to RCA Global Communications, Inc.'s international telex and leased channel customers under a plan accepted by the Federal Communications Commission (FCC) earlier this month.

The commission decided in 1979 that Communications Satellite Corp. had charged RCA and other U.S. international record carriers (IRC) too much for service. It ruled that the resulting overcharges collected by the IRCs from their customers should be paid back to those customers.

However, objections from the biggest single user, the U.S. Department of Defense, delayed distribution of the overcharges due RCA customers.

The plan accepted by the FCC last week provides that 45% of the total will be paid to RCA's leased channel users and the remaining 55% to its telex customers. DOD will receive "over $3 million."

The disbursement will occur "within the next 60 days," a source at RCA said.

FCC Issues Interpretation Of Computer II Ruling

WASHINGTON, D.C. — Computer-based services that facilitate "basic" communications offerings can be provided directly by AT&T operating companies without violating the Second Computer Inquiry Decision, the Federal Communications Commission (FCC) ruled earlier this month. The ruling was the latest in a continuing series of interpretations of the "separate subsidiary" rule which, according to many critics, is gradually erasing the rule.

The latest Computer II interpretation arose from a complaint filed last year by Datapoint Corp. on AT&T's new Mechanized Credit Card Service (MCCS). The service enables credit card holders to make operatorless long-distance calls by punching their credit card numbers into Tnuch-Tone telephone keypads.

According to Datapoint, "MCCS is clearly an enhanced service" because it "requires information inputs and performs functions far beyond those required to establish a mere transmission path."

According to a recently released FCC statement, however, "MCCS . . . does not change the nature of the service, but merely facilitates its use."

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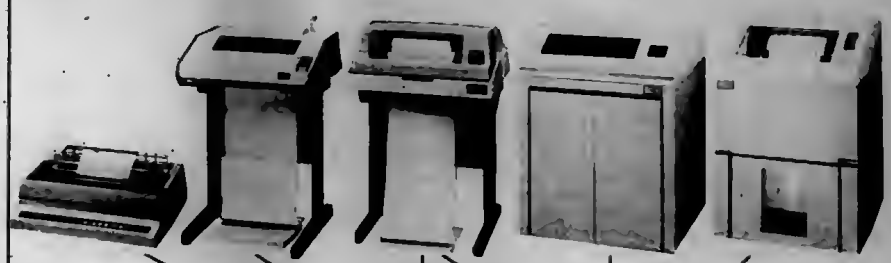

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VENDOR	SERVICE	DIGITAL/ ANALOG	COVERAGE AREA	NUMBER OF USERS	SPEEDS	MODES/ PROTOCOLS SUPPORTED	RATE ELEMENTS
AT&T	Dataphone Digital Service	Digital	400 Cities	Not Available	2,400 Bit/Sec 4,800 Bit/Sec 9,600 Bit/Sec 56K Bit/Sec	Synchronous, Full-Duplex, Half-Duplex	Mileage-Sensitive, Local Termination Charge, One-Time Installation Charge
United States Transmission Systems	Private Line	Analog	23 Cities	Not Available	Up to 9,600 Bit/Sec	Asynchronous, Synchronous, Half- and Full-Duplex	Mileage-Sensitive, One-Time Installation Charge
Tymnet, Inc.	Tymnet	Digital/Analog	280 Cities 36 Countries	Not Available	2,400 Bit/Sec 4,800 Bit/Sec 9,600 Bit/Sec	Asynchronous, Synchronous, X.25, IBM 3270 Binary Synchronous Communications	Host Interface Charge, Customer Account Charge, Character Transmission Charge, Terminal Interface Charge
GTE Telenet Communications Corp.	Telenet	Digital/Analog	250 Cities 40 Countries	800 Customer Organizations	110 to 1,200 Bit/Sec 2,400 Bit/Sec 4,800 Bit/Sec 9,600 Bit/Sec 56K Bit/Sec	Asynchronous, Synchronous, IBM 3270, 2780/3780, X.25, Half- and Full-Duplex, TWX, Telex	Monthly Charge, Installation Charge, Host Interface Charge, Character Transmission Charge
RCA	Cylix	Digital/Analog	300 Cities	107 Customer Organizations	4,800 Bit/Sec 9,600 Bit/Sec 56K Bit/Sec	Synchronous, Full-Duplex, Burroughs Corp. Polled Select, IBM 3270 Binary Synchronous Communications, IBM Synchronous Data Link Control	Character Transmission Charge, Monthly Charge, Installation Charge, Host Connection Charge
Compuserve	Network Services	Digital/Analog	200 Cities	Not Available	110 to 1,200 Bit/Sec	Asynchronous, Full-Duplex	Character Transmission Charge, Host Connection Charge, Monthly Charge, Installation Charge
Western Union	Private Line	Analog	47 Cities	Not Available	0 to 300 Bit/Sec 2,400 Bit/Sec 4,800 Bit/Sec 9,600 Bit/Sec	Synchronous, Full-Duplex	Mileage-Sensitive, Station Termination Charge, Line Conditioning Charge, "Pass-Through" Charge to Cities off the Network
American Satellite Co.	Specialized Network Services	Digital/Analog	27 Cities	250 Customer Organizations	9,600 Bit/Sec 56K Bit/Sec 1.5M Bit/Sec	Synchronous, Half- and Full-Duplex	Monthly Mileage Charge
Satellite Business Systems	Private Network Services	Digital/Analog	Nationwide Custom Networks	20 to 30	2,400 to 1.5M Bit/Sec	Depends on Network Configuration	Depends on Number of Earth Stations and User Locations
American Bell, Inc. Advanced Information Systems Division	ATS/Net 1000	Digital/Analog	17 Cities	Network Still in Beta Test	0 to 300 Bit/Sec 1,200 Bit/Sec 1,800 Bit/Sec 2,400 Bit/Sec 4,800 Bit/Sec 9,800 Bit/Sec		Host Interface Charge, Volume Transmission Charge, Monthly Charge, Installation Charge

A Sampling of Long-Distance Common Carriers With Data Transmission Services

One hundred long-distance common carriers were tariffed as of August 1982, according to the Federal Communications Commission (FCC). Space and time constraints make it impossible to chronicle all of them here.

Therefore, a representative sampling has been selected. It includes AT&T, which no story on common carriers can omit; value-added packet-switching networks, satellite carriers; and a couple of smaller private-line carriers.

The primary thrust of this Product Spotlight is on data transmission, and the firms listed were asked to describe their service with that in mind.

One thing to bear in mind is that common carriers serve metropolitan areas as much as they do specific cities. So when one claims to serve 100 cities, it probably does so through a base of 25 or fewer large, individual cities.

The companies detailed in the chart are:

•***AT&T.*** Obviously the dominant common carrier in the U.S., if not the world, AT&T considers its Dataphone Digital Service to be its "premium" long-haul data service.

195 Broadway, New York, N.Y. 10007.

•***United States Transmission Systems (USTS).*** USTS is a subsidiary of ITT and a good example of a smaller size common carrier. Its backbone network stretches from Dallas to New York with "spurs" in other areas.

Product Spotlight

2 Broadway, 16th Floor, New York, N.Y. 10004.

•***Tymnet, Inc.*** The Tymnet value-added, packet-switching network is well-known for its ability to translate protocols and facilitate remote computing. It features high-, medium- and low-density cities, with prices being lowest in the first.

2710 Orchard Pkwy., San Jose, Calif. 95134.

•***GTE Telenet Communications Corp.*** Telenet is another value-added, packet-switching network with features closely paralleling Tymnet. The two networks are closely identified with each other but offer different pricing schemes.

8229 Boone Blvd., Vienna, Va. 22180

•***RCA Corp.*** The RCA Cylix Communications network differs from Tymnet and Telenet by its extensive use of satellite technology. The network includes earth stations in 30 cities.

800 Ridge Lake Blvd., Memphis, Tenn. 38119.

•***Compuserve.*** Perhaps best known for its time-sharing services, Compuserve also offers its Network Services, a value-added, packet-switched network. Its pricing scheme is similar to Tymnet's.

5000 Arlington Centre Blvd., P.O. Box 20212, Columbus, Ohio 43220.

•***Western Union Telegraph Co.*** Among its many offerings, Western Union provides private-line service to 47 "on net" cities. However, service is also provided (with an accompanying "pass-through" charge) to "off net" cities through other common carriers.

One Lake St., Upper Saddle River, N.J. 07458.

•***American Satellite Co.*** The Specialized Network Services Division stresses its pricing advantages over other common carriers for long-haul data transmission. The company owns 20% of the Western Union Westar satellite system.

1801 Research Blvd., Rockville, Md. 20850.

•***Satellite Business Systems.*** Through its private network services, SBS offers large-scale dedicated networks for very large (approximately 25) users. Other grades of service are available for lower volume users.

8283 Greensboro Drive, McLean, Va. 22102.

•***American Bell, Inc.*** Net 1000 is billed as an intelligent, packet-switching network that will allow online processing and protocol conversion. Formerly known as Advanced Communications Service (ACS), it is still being beta tested.

4 Wood Hollow Road, Parsippany, N.J. 07054.

CW Chart

Host of Carriers Challenging AT&T for Market

(Continued from Page 1)

service, to GTE Telenet Communications Corp., which operates a value-added, packet-switching network, to satellite companies such as American Satellite Co.

Because the marketplace for the services these companies offer is so large and diverse, the fight may end in a standoff, according to Dr. Joseph Sciulli, president of the consulting firm Telecommunications Techniques Corp., based in Gaithersburg, Md.

"Somehow these things have to coexist and find their particular place in the system, rather than being the one thing that's going to take over and dominate the world," Sciulli commented. "All of these things have a place."

He called local distribution the most important problem currently facing the common carrier market. Alan Baughcum, director of telecommunications research for Charles River Associates, Inc. in Cambridge, Mass., agreed.

Baughcum said quality and cost of connection are the two primary problems facing carriers who want to interconnect with local loops. "There is the whole question of whether or not AT&T is going to have preferential treatment from the Bell operating companies," he noted. "The concern on the part of service providers is that their competitors not be given preferential treatment."

The Bell operating companies must provide equal interconnection access on an unbundled tariff basis to other common carriers over a two-year period starting Sept. 1, 1984 and ending Sept. 1, 1986.

Large users can bypass the local loop dilemma by taking advantage of services such as those offered by Satellite Business Systems, which provides digital end-to-end links between customer premises, he said.

Digital termination systems (DTS) will also bypass the local loops when they become available. "DTS could come on pretty soon, within the next year or two," Baughcum declared.

Dr. James Jewett, president of Telco Research Corp. in Nashville, Tenn., pointed out that more carriers accessing AT&T's network also means more carriers with which end users must deal. For example, if a user wanted to access Western Union from Nashville, Tenn., it would have to go first through the local Bell operating company. At the point of Western Union termination, another Bell operating company would be required to move the data from there to its ultimate destination. Beyond that, the user would have to deal with a modem manufacturer in order to obtain the necessary modems.

"Right there that's four vendors — two [Bell operating companies], Western Union and a modem manufacturer," Jewett said, "just to get a link between two points."

He claimed that wideband offerings like AT&T's Dataphone Digital Service, which provide data at T1 rates of 1.5M bit/sec, are the wave of the future. "I think T1 is clearly the evolving strategy for both data and voice people," the Telco Research president stated.

However, Bell will have to weigh its T1 options carefully, he added. If AT&T makes the price of T1 services too low, companies will be able to break the wide bandwidth into 24 voice channels — each of which could carry up to 56K bits of data — and then resell channel capacity, Jewett said. Those 56K bit/sec streams could also be multiplexed down into other lower speed channels (story below).

If, on the other hand, AT&T charges too much for T1, it will create a very favorable market for the satellite carriers because "satellites can compete with T1 very very well," Jewett said.

Concerning Bell's competition, Sciulli alluded to MCI Communications Corp. as a mostly voice-oriented common carrier that is making a serious move into long-haul data. "MCI is going to put in a lot of fiber and they basically bought out the Hughes satellite in one fell swoop," he said. "They're going to spend a billion dollars building wideband facilities. When you have fiber and satellites together, you have wideband covered over all distances."

Product Spotlight

'More carriers accessing AT&T's network also means more carriers for end users to deal with. For example, if a user wanted to access Western Union from Nashville, Tenn., it would first have to go through the local BOC. At the point of Western Union termination, another BOC would be required to move the data from there to its ultimate destination. Beyond that, the user would have to deal with a modem manufacturer in order to obtain the necessary modems.'

AT&T

Dataphone Digital Service

- Monthly private-line service.
- Multiply prices five times for 56K bit/sec service.
- For termination charges, add $199 for 2,400 bit/sec service, $618 for 4,800 bit/sec service, $788 for 9,600 bit/sec service and $1,016 for 56K bit/sec service.

New York to Los Angeles
$1,935
Minneapolis to New York
$1,168
Miami to Atlanta
$723
Dallas to San Francisco
$1,378
Dallas to New York
$1,312

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Specialized Network

Customer Premises-to-Customer Premises Connection:
New York to Los Angeles
$1,199/Mo, $9600/Year
Dallas to San Francisco
$600/Mo, $7200/Year

CW Chart

Three Representative Pricing Schemes

TYMNET, INC.

Tymnet

- Monthly customer account charge, $100.
- User names, $4 each.
- Host interface charges:
— Asynchronous monthly charge of $1,900 and one-time installation charge of $1,700 for eight simultaneous users at transmission speeds of 110 to 1,200 bit/sec. For 128 simultaneous users, $6,300 monthly charge and a $2,000 one-time installation charge at same speeds.
— Synchronous monthly charge (for example, X.25, IBM Binary Synchronous Communications and 3270) depends on specific line speed and interface. Monthly charges per interface begin at $1,100; the one-time installation charge per interface begins at $1,000 for services from 2,400 to 4,800 bit/sec. Service at 56K bit/sec is on a special quotation basis for monthly charge per interface; the one-time installation charge is $1,000.
- Host front-end software (required for some host processors), $400.
- Character transmission charges range between five cents for the first 80,000 kilocharacters to one cent for anything over 300,000 kilocharacters.
- Terminal interface charges: Asynchronous 110 to 1,200 bit/sec Public Access Ports charged on hourly basis. Character transmission charges also apply unless otherwise stated for all forms of terminal interface. Hourly rate range: $2 to $4.35 with peak-time surcharges. Private Access Ports available in medium- and high-density cities for between $225/mo and $685/mo with one-time installation charge of $200.
- Dedicated Terminal Interfaces: Monthly charge of $1,000 and one-time installation charge of $1,000 for eight terminals with speeds from 110 to 1,200 bit/sec; monthly charge of $2,700 and one-time installation charge of $2,000 for 128 terminals at 110 to 1,200 bit/sec.
- Network connections for dedicated terminal interfaces range between $900 and $1,800 monthly and include a one-time installation charge of $1,000.

They Divvy Up Bandwidth for Cash

Move to Wideband Brings Resale Carriers

By Bruce Hoard
CW Staff

One side effect of the move to wideband communications is the emergence of the resale common carrier. Usually with profit motive aforethought, but sometimes unintentionally, these companies are divvying up bandwidth for cash.

Resale carriers buy in bulk from another high-volume carrier high-speed links such as T1 or 1.5M bit/sec, multiplex them down into multiple, slower speed links and resell them to smaller users who cannot afford to buy bulk digital transmission.

According to Dr. Joseph Sciulli, president of Telecommunications Corp., the resale scene can be a favorable one for small users. "If they have that guy in between called the resale carrier, who will unbundle it for them, break it down, do the multiplexing and transmission, terminations and local distribution, [a smaller user] may be able to buy service more cheaply than he could if he went directly to Bell," Sciulli noted.

He added that the ideal place for a resale carrier is in an area where there are many small businesses that are interested in purchasing broken-down bandwidth.

However, not all resale common carriers are offering premeditated services. As Sciulli put it, "People are starting to treat capacity like a condominium; you buy a piece and you have a share of the total risk. You're going to see more and more of that kind of thing."

Less Favorable Side

Dr. James Jewett, president of Telco Research Corp., discussed another, but less favorable, side of the resale scene. He said some resellers who deal in wide-area coverage make a lot of money on the way they measure the beginning and termination of a call. He claimed that resold Wats substitutes are more economical than other resale offerings because people can more readily compare resold Wats prices with normal Wats prices.

"There is a great deal of deception done, particularly with the small resalers and the wide-area coverage," Jewett declared.

This unpleasant situation is particularly applicable to data callers performing such tasks as dial-up polling for point-of-sale inquiries, he added.

So how can people protect themselves? "They basically can't," he replied.

Alan Baughcum, director of Telecommunications Research with Charles River Associates, Inc., said one thing to consider about resale common carriers is their ability to provide quality of service in conjunction with their low prices. Because resellers are so heavily dependent on pricing in order to sell their products, they are also vulnerable to price responses from AT&T.

"Part of the question is how long are these resalers going to be in business," he commented.

To Respond to Emergency Calls

Los Angeles Police to Launch $42 Million System

By Robert Batt
CW West Coast Bureau

LOS ANGELES — After almost 15 years of planning, the nation's third largest city next month will launch what is expected to be one of the biggest police command and control systems in the world.

The $42 million Emergency Command Control Communications System (ECCCS) took 10 years to be approved and another 4½ years to build. It will be fully operative next month, 14 months behind schedule.

The system was designed to cut down substantially on the Los Angeles Police Department (LAPD) response times to the three million calls for help it receives each year. Crime rates in the city continue to increase, although at a diminishing rate compared with previous years.

"Under our current manual system, it takes two to three minutes on average to respond to an emergency call and send police officers to the scene of a possible crime. Using ECCCS, we will be able to cut this time down to 30 seconds," claimed David Burney, an LAPD captain and the system's program manager.

Under the system, the LAPD's two data centers will be merged into one. Telephone calls currently received at the LAPD's San Fernando Valley communications facility in Van Ness will be transferred to the Los Angeles data center, which will act as the central terminal for all calls for help. The 100 people working in Van Ness will move to the Los Angeles data center, but no computer equipment is involved in the transfer.

"The transfer will be transparent to the public and there will be no disruption of service," Burney promised.

The new system is based around four Digital Equipment Corp. PDP-11/70 and two PDP-11/34 minis, six PDP-11/03 micros, 143 programmable terminals, 855 mobile digital terminals and 3600 portable radios. The four PDP-11/70s provide ECCCS' primary data processing capability. Two are designated as communications processors and two as main system processors.

Fortran, HOL and ALC are the main languages used.

The DP segment of the system includes 11.8M bytes of main memory, eight disk controllers and 10 disk drives.

The new project's design was not without its problems. The LAPD wanted to adopt a systems approach to implementing ECCCS and chose a local systems firm, System Development Corp. (SDC), rather than an equipment manufacturer, as prime contractor for the project.

The project was scheduled to be completed within 3½ years. "There was fierce competition for the project, and SDC brought its time line down from an inltial 50 months to 42 months in order to get the project, although I think they knew full well they couldn't meet the deadline," Burney said. The baseline design, which should have taken just four months, actually took 18 months.

Never Caught Up

Moreover, "there were a lot of problems at the beginning in defining the system and translating it into computer specification, and once behind, we were never able to make up for lost time," Burney added.

SDC refused to comment on the delays, citing contractual obligations as the reason for remaining tight-lipped about the affair.

To house the new system, the LAPD built a central dispatch center that holds 60 consoles and 300 employees. In addition to improving response times to citizen calls for service, ECCCS is expected to give better protection to the city's 6,900 police officers and help dispatch LAPD forces during both routine and emergency conditions. By doing so, the system is intended to help save lives, improve the coordination of resources and provide for more cost-effective operations.

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Court Stays Comsat Ruling

WASHINGTON, D.C. — The circuit court of appeals here has atayed implementation of a recent Federal Communications Commission (FCC) decision allowing Communication Satellite Corp. (Comsat) to offer its services directly to end users. A tariff covering the new Comsat services was to have gone into effect at the end of last month.

The court acted on petitions submitted by several international record carriers (IRC), which insist the FCC ruling discriminates against them. The IRCs, which currently have to go through Comsat earth stations, want to access international satellite facilities directly.

It will take at least three months, according to a court spokesman, for the court to decide whether the FCC order should be changed. The stay will remain in effect in the meantime.

EEC Approaches IBM to Settle Antitrust Action

By Rex Malik
Special to CW‡

The legal battle between IBM and the European Economic Community (EEC) may be drawing to a close. The EEC's European Commission has given IBM proposals for the settlement of its antitrust complaint, according to a recent report in the British weekly *Computing*.

The European Commission, the civil service arm of the 10-nation EEC, will neither confirm nor deny that it has sent the proposals to IBM. Under EEC law and procedures, such proposals are private until agreement and a legal decision are reached.

Nevertheless, European sources indicate that the first proposal requires IBM to make channel-to-controller interface information — the so-called 370-compatible instruction set — available to anyone who wants it within 30 days of the announcement of a new IBM product in Europe.

IBM will be able to make its disclosure conditional on the requirement that the company requesting it not sell outside the EEC a product based on the interface data until IBM makes its product announcement outside the EEC.

This is largely academic, because products in the range covered are usually first announced in the U.S.

In addition, IBM will be able to charge a small price, reputedly 1% of the value of the product, if another vendor introduces a product that utilizes the interface information.

The second proposal reportedly involves IBM's pricing practices for main memory. The European Commission wants IBM to offer CPUs with and without memory and to provide fair pricing for the memory.

The Aim of the Proposal

The aim of the proposal seems to be to prevent IBM from offering purchasers an unfair inducement to buy IBM memory by pricing it substantially lower when it is bought as part of a system than when it is separately priced or bought as add-on memory.

These proposals cover IBM's 370, 4300 and 30 series mainframes. It is unlikely that IBM will be bound by these proposals in the case of some future large system series that uses a different instruction set. However, many IBM watchers feel that the vendor will comply with these proposals on currently unannounced systems rather than face the same investigation again.

The memory pricing proposal was supposedly a surprise to IBM, which reportedly considered that issue dead. The interface proposal, however, was not totally unexpected [CW, Feb. 28].

IBM has until April to respond to the European Commission's proposals. The consensus among industry observers is that the vendor will agree to both proposals rather than face a hearing before the European Court of Justice, which would probably generate unfavorable publicity.

The commission's original objections to IBM's alleged practices were made as a result of inquiries prompted by complaints from U.S. companies including Memorex Corp., National Advanced Systems, Inc. and Amdahl Corp. These complaints were compared by many to the issues raised in the U.S. vs. IBM antitrust suit, which was dismissed last year.

The Commission originally confronted IBM with four complaints. They were concerned with the unbundling of systems software and with IBM's System Installation Productivity Option tapes. IBM has apparently changed its practices in these areas, although there is some question on whether the EEC complaint had anything to do with such change of practice.

Case Homework To Go Paperless

CLEVELAND — Students at Case Institute of Technology at Case Western Reserve University will submit paperless homework this fall as part of a research project designed to streamline the information flow between professors and students.

Eight hundred to 1,000 freshmen and sophomores on the Case campus will use about 75 Digital Equipment Corp. Professional 350 personal computers. The microprocessors at the college will be linked to a Digital Equipment Corp. VAX-11/730 supermini via a Xerox Corp. Ethernet local-area network.

According to Donald E. Schuele, vice-dean of the institute, science and engineering students will use the computers to do homework assignments, and the faculty will use them to assign problems and record grades.

Fifty of the computers will be installed in a laboratory for students to use on a rotating schedule 16 hours per day, six or seven days a week. Others will be placed in six-person dormitory suites.

Residents of the suites can lease a computer jointly for about $1,000 a year for four years, with an option to buy it for about $6,600, Schuele said.

Students have shown a great deal of enthusiasm for the program so far. "The hardest people to convince are probably the faculty," Schuele maintained.

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For application information, call or write to or call: Cynthia Johnson, Corporate Liaison, Wang Institute of Graduate Studies, School of Information Technology, Tyng Road, Tyngsboro, MA 01879, (617) 649-9731.

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Bell Labs Exec Cites OA Needs

Lack of Managerial Support Systems Lamented

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — One largely uncharted territory of office automation — managerial support systems — will stubbornly resist the incursion of automation until there are radical changes in systems design and implementation, according to a Bell Laboratories executive.

Joseph L. Laferrera Jr., executive director of Bell Labs' Management Information and Administrative Systems Division, said in his keynote address at the Federal Office Systems Expo here that "with all the recent hype in office systems . . . it is moving rather slowly at the managerial level." In his March 15 address, Laferrera discussed the conclusions reached by Bell Labs after surveying many of the approximately 100 office systems now available and after implementing a prototype system at Bell Labs.

Most current systems are "very heavily word processing-oriented" and "more nearly suit the needs of the clerical and support staffs than they suit the needs of the manager." They also suffer, he said, from little integration of voice, data and video, from a lack of integration with decision support systems and from incompatibility with other systems.

Moreover, they do not resolve networking issues, do not "fit" into office environments, pay "relatively little attention" to security and present no clear future direction or strategy.

The answer to these problems at some organizations is to deploy personal computers for managers, Laferrera noted. But this is "grasping" for a quick solution and is more of "a Band-Aid when open-heart surgery is really called for." The problem with personal computers, he explained, is that they generally lack interfaces with corporate mainframes, where 99% of the important data is stored.

Some of the findings of Laferrera's department, based on implementing a prototype managerial support system at the highest levels of Bell Labs, were:

• Understanding office sociology is as important as understanding technology. "The rituals, mores and the culture determine the systems by which the office functions," he said, adding that his experience showed secretaries cannot be removed from the office information loop without a disaster.

• "Managers are simply not a tolerant lot." The system must be functioning close to 100% of the time and have almost instantaneous response time or it will not be used. "Managers simply don't understand and are not willing to learn how files end up in computer heaven," he observed.

• Office systems need rules just as all offices have understood operating procedures. These types of rules "don't exist in the automated systems today," he said.

• System flexibility is absolutely vital. People will adjust to individual managers, he said, but systems generally do not — "they either come in vanilla or vanilla." Systems must be adjustable to the needs of each user, he said.

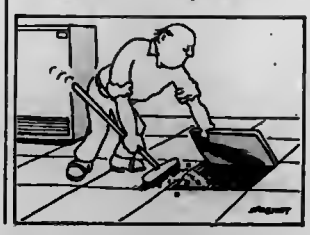
• Aesthetics are important. "The office is typically a reflection of the manager . . . Good systems blend in," according to Laferrera, who said managers typically say aesthetics are not important, "but they don't mean it."

He concluded from the Bell Labs experiment that managers must participate in the information age. Leaders must "show personal involvement and commitment" to automation. "The survival of the manager is threatened unless he or she plugs into what is undoubtably the inevitable," he added.

Laferrera also warned that managerial automation cannot be cost justified in the usual meaning of the term, but can be justified on the basis of long-term benefits to the manager. He noted there are unresolved technical issues of automation that persuade some organizations to delay automation. Calling this unwise, Laferrera said "Technical problems are always solved."

He said managerial participation in systems implementation must be well planned and supported by the organization and by the vendor. He noted that people are uncomfortable with automation because it offers no clear destination, merely an identifiable direction.

In summary, Laferrera stated, "The question is not whether managers need to be participants in the information age; the real question is, can they afford to be spectators?"



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CIE SYSTEMS

People, Not Tech, Seen Making MIS Winners

By Bob Johnson
CW New York Bureau

NEW ORLEANS — People, not technology, will make the difference between DP winners and losers in company management information systems (MIS) organizations, according to a speaker at the Life Office Management Association (Loma) 1983 Systems Forum held here last week.

Brandt R. Allen, a University of Virginia professor and computer industry lecturer, told insurance industry DPers that computer personnel today make up the biggest part of most companies' applications systems areas and they represent the major portion of DP budgetary expenditures.

Because effective information processing in the future will depend on people rather than new technology, Allen reasoned, savvy DPers will have to plan their MIS organizations with this fact in mind. "A typical order entry system in a large organization in 1982-83 is likely to have a cost breakdown made up of about 31% system hardware and software, about 22% communications, 1% cooling and energy costs and 46% personnel," Allen maintained.

He claimed that not only are personnel costs high now, they are expected to rise. In many companies, Allen noted, the DP personnel cost figures are closer to 50% and even 80%, and some Japanese companies report people costs to be near 85%.

Illustrating the importance of personnel, Allen said that considering the lower costs of hardware and the rising costs of DPers, the average company's cost for computer time per hour is about the same as that of a programmer's. By 1990, the average programmer's salary could probably buy an IBM 3033 CPU.

The speaker stressed that MIS organizations must plan to find better solutions and technologies so that these people, who make up the bulk of DP costs, can be used less. He stated that a key measure for MIS to strive for is the ability to do the job with "fewer heads".

End of an Era

Allen told conference attendees that DP is reaching an end of an era, pointing out that although computer hardware is cheap, the cost of computing is rising. He stated that this growth rate can account for some of the increase, but personnel is a major expenditure. "I am now working with companies which expect their DP budgets to increase to three times their amount in 1986 and 1987," Allen said.

Computer personnel will become even more of a problem because more people will be needed to work on the current backlog of applications the industry now faces, Allen said. The speaker claimed that his experience with Fortune 500 companies reveals that there is as much as a three-year backlog of applications in these firms.

Along with the problem of applications backlog, rising DP personnel costs will stem from what Allen referred to as "badly needed" productivity developments. "There is currently little prospect for the development of productivity tools in DP. There is virtually no software that can keep pace with what the industry needs," he said.

The professor predicted that the industry will not get these kinds of tools by using the programming languages of today. He said that 80% of the big user companies have most of their applications coded in Cobol and they simply do not support the productivity improvements that are required.

"Cobol won't go away, but I hope by 1990 it will be considered a dead language. The future of DP does not belong to these languages. Many of the applications now in use date back to the IBM 360 CPU line. They are not competitive. They are creaky, brittle, dangerous and expensive to maintain. They reflect a way of doing business that is 25 years old," Allen said.

CW Photo by B. Johnson

'There is virtually no software that can keep pace with what the industry needs,' Brandt R. Allen told the Loma conference last week.

Another issue for MIS to be concerned with is that of a "serious shortage" of qualified people to do the DP job. Allen said that by 1990 there will be close to one million job positions in programming, but the job's traditionally high turnover rate, the predicted drop in the number of people entering the work force (25% drop in the next 10 years) and young people's decreasing aptitude for programming-type work will fuel this shortage.

Local Net Seen Key Item In Communications Plan

By Bob Johnson
CW New York Bureau

NEW ORLEANS — A "tidal wave of user dissatisfaction that will pale the common complaints of today" will be heard throughout an organization if DPers do not plan effectively for data communications.

That was what Dixon Doll, president of the DMW Group, Inc., told insurance industry information systems executives at the 1983 Systems Forum of the Life Office Management Association (Loma) here last week. Doll said that if a company expects to keep up with the rapidly changing telecommunications industry, a "master information technology plan" is necessary to translate the technology into business benefits.

The key to effective planning for the new technologies, according to the speaker, is in knowing what the DPer's particular business and user needs are, then finding the combination of vendors to meet these needs.

Doll maintained that an "electronic delivery mechanism" must be planned so that all business enterprises can be effective users. A "systematic" and well-conceived network of technologies such as local-area networks and private branch exchanges is essential if a company's telecommunications in the next decade is to serve its needs, he said.

A major part of the electronic delivery system to be planned for by the DP manager, according to Doll, is "end-to-end office communications." He pointed out that in order to establish such a system, these managers must deal with up to 15 different companies and vendors, including communications operating companies, local facilities, interchange carriers and so on. This fact, combined with the changes that will occur in 1984 because of the AT&T divestitutre, makes it even more crucial to plan ahead.

The key aspect of this plan, Doll noted, is the local-area network. He advocated that it be an "open" network incorporating a mixture of vendor workstations, personal computers, telephones and communications that can all be plugged directly into it. This is the only way a high level of business communications can be accomplished effectively in the future, Doll claimed.

"When selecting a [local-area network], you must look at all of the possible alternatives. The world of the future should allow for users in one building to exchange information with users in other buildings as easily as it is to exchange with each other," he said.

In planning for communications, the DP manager should think of the project in pure telecommunications terms and then address the areas of information network architecture, office automation and so on. After that, "complimentary" requirements such as data management and applications deveopment can be worked out, Doll said.

"Use all of your previous information and work interactively with senior management executives to determine a prioritized list of strategic telecommunications projects and programs with the highest payback for individual enterprises," he advised.

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Relationship No Longer Adversarial

Users Group Proposals Often Adopted by NCR

By Susan Blakeney
CW Staff

For Charles Yahn, being a member of the Mid-Atlantic NCR Users Group has been a positive experience for both himself and his employer.

"I think the users group has helped me grow and manage better," confided Yahn, the controller of United Associated Grocers, Inc. in Robesonia, Pa. "My association with NCR [Corp.] users from here and Europe has really widened my perspective ... it's been very beneficial for my personal growth and for my company's."

Yahn has seen the Federation of NCR Users Groups — comprised of 27 NCR user-groups — grow to an organization with 1,800 members since its inception in 1970. "NCR really listens to us," Yahn said. "We went through a tough period when NCR products needed a lot of interfaces for users. The group was very vocal and adversary then. That's changed somewhat now, but a lot's come out of the group."

Yahn's only reservation about the users group is that its annual convention is getting too large. "I'm amazed at the size of these conventions. It's getting too big to manage ourselves. I think we'll have to go to an outside agency."

The Federation of NCR Users Groups is the governing body of the 27 separate special interest and regionalized NCR users group. It is staffed by one full-time person who coordinates NCR user activities and produces the NCR users group newsletters. The vendor itself employs two full-time people to act as liaisons to the multiple users groups and helps out with the federation's administrative chores.

With the exception of the two NCR administrators, the users group takes care of itself in terms of operations and finance. It generates its own annual budget of roughly $124,000 from its conventions and seminars.

Joe Ternavan, president of Bank Information Processing, Inc. in Bloomingdale, Ill., is chairman of the federation. According to Ternavan, the users group enjoys a very solid and productive relationship with the vendor. "For example, we submit about 300 software proposals a year. Of those, 40% are usually accepted," he noted.

"They [NCR] also currently sponsor four of the special committees we've got going now," which include advisory groups on software, publications, education and communications.

Rosna Pamas, data processing manager of Mammoth Mountain Ski Area in Mammoth Lakes, Calif., is editor of the quarterly Federation publication called *Sitebytes*. A member of the Northern California NCR Retailers Users Group for seven years, Pamas lamented that this local group is "slowly dying because it includes too many people with too many different needs — a mix of large users and small users.

"You have to tailor them [users groups] specifically to people's needs — banking, retailing [and so on].

"Also, users groups fold because when you first form them you have a lot of complaints. Once you solve these problems, they tend to fall apart," she commented.

To counter this situation, Pamas wants to organize a local retailers group because of her location. "We're three hours away from the nearest big city [Reno, Nev.]. Groups need to be both specific and convenient to be effective."

On the whole, however, Pamas said she feels positively about her affiliation with the users group. "I feel users groups are a great idea if you can find the right group.

"I find the meetings I can get to very useful, and everyone I've talked to has, too ... I established a lot of great contacts. If you know someone who can help you solve your problems, it's so much better than calling the vendor's toll-free service number," she concluded.

The Federation of NCR Users can be reached through Mail Station SDC-2, Dayton, Ohio 45479.

Nucon '83 Set Next Month

KANSAS CITY, Mo. — "Information Management: The Bottom Line" will be the theme of Nucon '83, the annual conference of the Federation of NCR Users Groups that will be held here April 24-27.

The keynote address, "Right Place, Right Time," will be given by Ty Boyd, a broadcaster and sales consultant.

The registration fee until April 1 is $365; after April 1, it is $440. Forms and more information are available from Nucon '83 Central Service Office, Box 152, Dayton, Ohio 45401.

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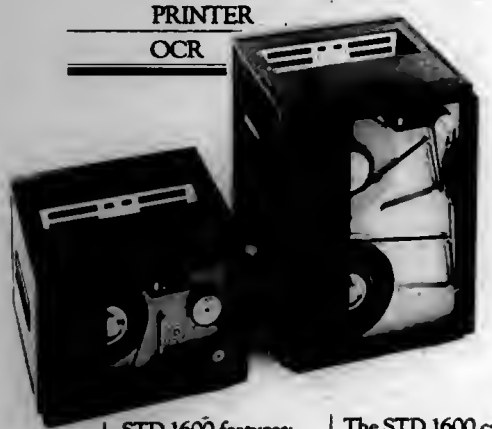

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'Politics' Not a Dirty Word, Consultant Says

By Jeffry Beeler
CW West Coast Bureau

SAN FRANCISCO — Problems involving company politics account for the vast majority of failures in systems development projects, according to the head of a local DP consulting firm.

For many, "politics" has become a dirty word synonymous with Machiavellian machinations. But the popular conception of politics as inherently corrupt or evil is wrong, consultant Robert Block said here recently during a seminar sponsored by the Association for Systems Management.

The truth of the matter is that politics is little more than the familiar process by which distinct groups of corporate employees interact with each other, Block said.

During the course of an ordinary workday, Block noted, managers of systems development projects are called upon to deal with a wide assortment of non-DP personnel — end users, vendors, upper management and auditors, to name just a few.

The resulting interactions with these diverse groups are primarily political and, if the interactions are somehow disrupted, systems development projects can often go awry, Block said during the seminar, which dealt with microcomputers in big business.

Like it or not, politics pervades just about every facet of corporate life, and project managers who refuse to take part in their companies' political goings-on do so at their own risk, Block warned.

"You can't afford not to play the political game," the president of Robert Block Associates, Inc. said. "Not playing the game is itself a political move, and it's not a particularly good one."

The problem with engaging in company politics is that most of the computing personnel who are promoted to the position of project manager come from the technical ranks. Thus, such individuals are frequently ill-equipped to deal with anything political, Block said.

To increase their political savvy, managers of systems development efforts first must realize that company politics is basically a six-step process that can be learned eventually. The six steps include:

- Definition of systems goals.
- Evaluation of a corporate systems department's assets and liabilities.
- Understanding the environment of an intended system's users.
- Identification of a development project's potential pitfalls.
- Formulation of possible solutions to those problems.
- Implementation of the solutions and appraisal of the results.

In the first step, project managers should seek to distinguish between a proposed system's critical features and the ones that are desirable, but unnecessary, Block said.

In the third step, project managers would be well advised to try to understand their companies' organization and procedures, both formal and informal.

They also need to understand the responsibilities and motivations of the major corporate "players" with whom they will have to interact during a systems implementation effort, Block added.

AT&T Delays TDC Service

WASHINGTON, D.C. — AT&T has delayed the effective date of its Terrestrial Digital Circuits (TDC) service and has modified a controversial provision of its tariff. However, the moves are not expected to satisfy competitors, which means further delay is possible.

TDC, a point-to-point dedicated digital private-line service, is intended to be a replacement for 1.544M bit/sec Dataphone Digital Service. When the original tariff was submitted to the Federal Communications Commission (FCC) several months ago, competitors complained that they would have to pay more than AT&T's subsidiary, American Bell, Inc., for TDC access channels.

The competitors also objected to a provision requiring use of a terminal interface that can be obtained only from the phone company and to another, which said that after Jan. 1, all terminals connected to TDC channels must employ an AT&T-developed communications protocol.

Last December, AT&T eliminated the two-price system for TDC access channels. In its latest submission to the FCC, besides delaying the effective date, AT&T has also delayed imposition of the proprietary communications protocol. Instead of Jan. 1, 1984, TDC users would have to begin using the new format by Jan. 1, 1985.

OH WHAT A YOU WEAVE.

Three Steps to Effective Management Offered

CW Photo by J. Beeler

'Feedback about results is the breakfast of champions,' Dr. Kenneth Blanchard said recently.

By Jeffry Beeler
CW West Coast Bureau

SAN FRANCISCO — Information systems managers could improve their employees' motivation and thus boost their departments' output if they would follow just three simple steps, according to author and management consultant Dr. Kenneth Blanchard.

The three keys to increased management effectiveness include clearly defined job goals, praise and reprimand, Blanchard said during a recent seminar sponsored by the Association for Systems Management.

For a systems department to function smoothly, DP managers and their subordinates first must agree on precisely what their goals are.

"If you don't have goals, you're not a manager. You're just mucking around," the head of Escondido, Calif.-based Blanchard Training and Development, Inc. said.

Systems managers and their staffs also must define mutually agreeable standards for acceptable employee performance, Blanchard said during the seminar, which dealt with the topic of microcomputers in big business.

A second component of effective systems management is praising employees for a job well done. "The key to personnel development is catching people in the act of doing something right," the author of the best-selling management guide, *The One-Minute Manager*, said.

To be effective, praise has to be timely. A pat on the back loses much of its intended impact if it is awarded for praiseworthy performance that occurred a month earlier, Blanchard noted.

Praise should also be specific, Blanchard said. When complimenting employees for a job well done, managers should make sure to cite particular deeds or accomplishments.

The third component of improved systems management is effective reprimanding. Like praise, reprimands need to be both timely and specific, but they should also be reserved exclusively for employees who are already winners.

Never punish subordinates who are still learning to be effective. "Punishing people who aren't yet winners only makes them feel more insecure," Blanchard said. "Punishment works only for correcting problems in attitude, not for problems in performance."

Reprimands and praise are the key ingredients of effective feedback, which Blanchard described as the most powerful known motivator of human beings.

"Feedback about results is the breakfast of champions," Blanchard said.

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Aicpa Schedules Micro Meet

CHICAGO — The American Institute of Certified Public Accountants (Aicpa) will hold its annual Microcomputer Conference May 15-18 at the Hyatt Regency O'Hare here.

General session topics to be covered include "Introduction to Microcomputers," "Microcomputer Hardware and Software Selection," "How to Get Started" and "Micro Pleasures and Pitfalls."

The conference is organized according to three levels. An introductory session program costs $150, the advanced program costs $250 and a combined session fee is $350. Registration fees include sessions, conference materials, continental breakfasts, luncheons and coffee breaks. Hotel accommodations are not included.

More information is available from Aicpa's Meetings Department, 1211 Ave. of the Americas, New York, N.Y. 10036.

Newsletter Devoted To IBM System/34

JACKSON, Miss. — "Tips and Techniques," a monthly journal devoted to the IBM System/34, was recently announced by Britz Publishing, Inc. The newsletter's primary focus is on system design and programming in RPG-II language.

Each issue of "Tips and Techniques" contains 10 to 15 tips on program-coding techniques, data manipulation and system operations, along with hints on disk space, library space and printer operations.

Annual subscription to the newsletter is $50. A sample issue can be obtained free of charge through Tips and Techniques, 1814 Capital Towers, Jackson, Miss. 39201.

Amdahl, Branscomb To Address Ifip '83 In Paris Sept. 19-23

PARIS — The International Federation for Information Processing has released a list of speakers for the 9th World Computer Congress (Ifip '83), which will be held here Sept. 19-23.

Thirteen U.S. computer scientists are among the 42 people who have accepted Ifip invitations to speak at the conference. They include Dr. Gene M. Amdahl, chairman of the board of Trilogy, Ltd., who will discuss architectural designs for high-performance systems; Dr. Lewis M. Branscomb, IBM vice-president and chief scientist, who will address the problems associated with designing user-friendly systems; and Gordon E. Moore, chairman of the board at Intel Corp., who will discuss the evolution of the microprocessor.

Other scheduled speakers include Tohru Moto-Oka and Kazuhiro Fuchi of the Department of Electrical Engineering at the University of Tokyo, who will discuss the architectures of fifth-generation computers; Prof. J.D. Nicoud of the Ecole Polytechnique Federale in Lausanne, France, who will address the expectations of standardization; and Dr. G.K. Gupta, a member of the Department of Computer Science at Australia's Monash University, who will speak on computing in developing countries in Asia.

Subjects to be discussed are grouped into 10 areas: Computer Hardware and Architecture, Computer Software, Theoretical Foundations of Information Processing, Computer Networks and Communications, Data Base and Information Systems, Application Systems, Office Information Systems, Microprocessor Applications, Social and Economic Implications and Computers in Everyday Life.

More information is available from Philip Doran, chairman of the marketing committee of the U.S. Committee for Ifip '83, 25 E. 86th St., New York, N.Y. 10028.

Set of Standards Out for Designers

ESTILL SPRINGS, Tenn. — A four-volume set of software design standards for software designers, managers and quality assurance departments is available from Associated Technology Co.

The set covers documentation practices and standards for programming in Cobol, Fortran and Basic.

It is useful in establishing internal programming and documentation practices, a company spokesman explained.

The set costs $45 from Associated Technology, Rt. 2, Box 448, Estill Springs, Tenn. 37330.

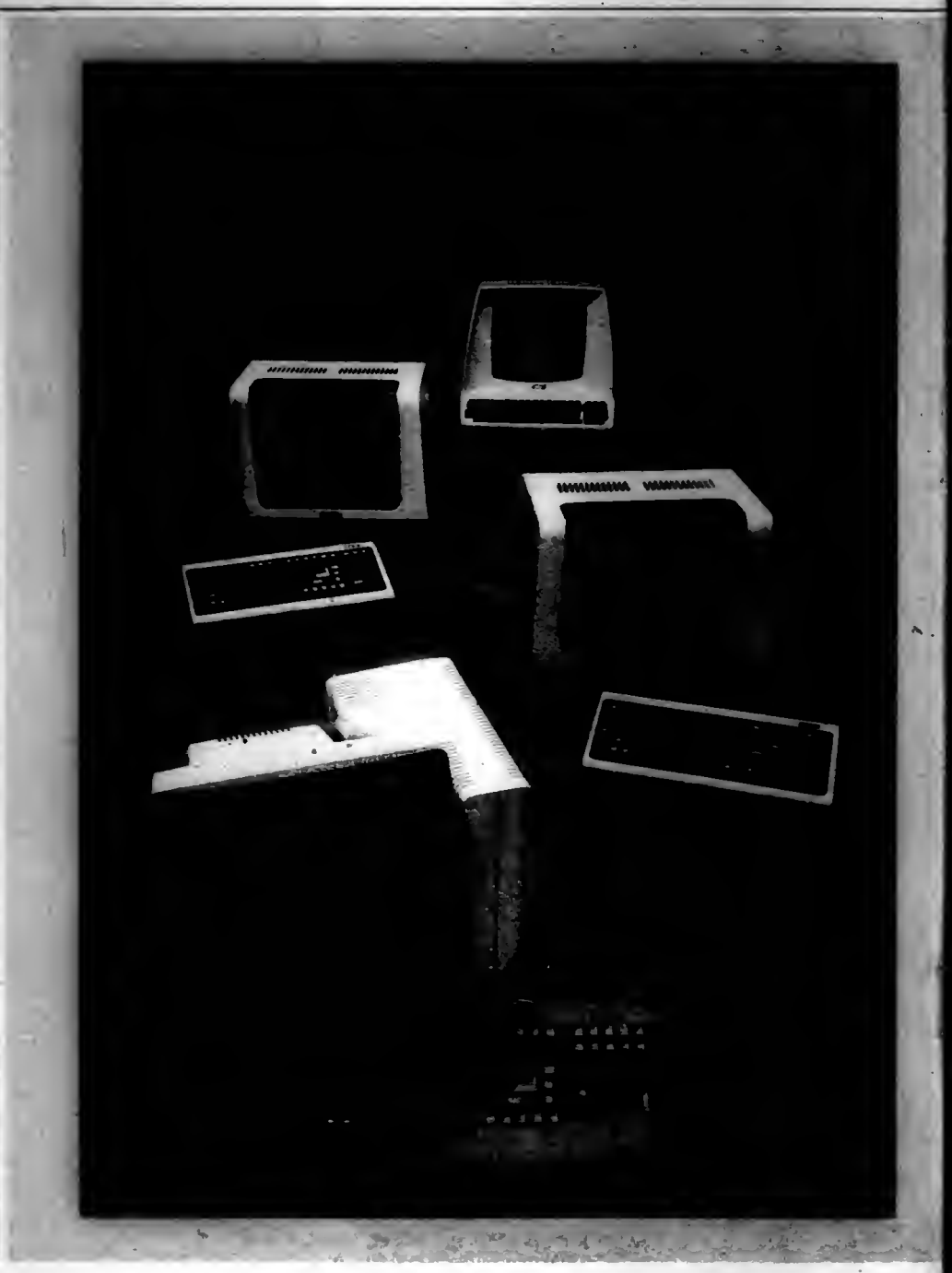
Grants Available for Ifip '83

ARLINGTON, Va. — The National Science Foundation will provide funding to send American computer scientists to the 9th World Computer Congress Sept. 19-23 in Paris.

The grants, which will be awarded by the American Federation of Information Processing Societies (Afips), are available to computer scientists who have either already made significant contributions to computing or who show potential for making significant contributions, Afips said.

The grants can range up to $1,050 (basically the cost of round-trip airfare). Those who wish to apply for a grant must send Afips a letter by April 15 outlining approximate dates of travel, point of departure, planned participation in the conference, expected benefits to be gained from the conference, other sources of support for the trip, a brief biography and a statement of willingness to provide a postconference report to Afips within 30 days after returning from the conference.

Applications should be addressed to John Gilbert, Afips, 1815 N. Lynn St., Arlington, Va. 22209.



DPers Told 'Tight Shop' No Longer Enough

By Bob Johnson
CW New York Bureau

STAMFORD, Conn. — DP managers cannot remain stuck in the large systems world, but must maintain overall DP control and strike a balance between end users and new technologies if they expect to offer their companies effective information processing, a research company executive said here in a recent interview.

Mark Ludwig, president of Techtran, a subsidiary of the Gartner Group, which supplies information to IBM systems users, said that it is no longer enough for management information systems (MIS) executives simply to operate a "tight DP shop." Instead, they must become the controlling center of a company's entire information processing function.

The executive maintained that a potential "threat" faces the MIS department — it could lose its functional day-to-day responsibilities and its manager could become just a manager of a big DP utility. He cautioned that DPers must be aware of DP work done in their organizations without DP department intervention.

One evident and major threat to Data Processing control is telecommunications, Ludwig noted.

"Information processing no longer has the luxury of separating telecommunications and DP. The technologies are merging rapidly," he said. "DP may be forced to take a secondary role to telecommunications if it doesn't grab the lead now," he said.

To illustrate his point, Ludwig said that users now regard private branch exchanges as local-area network controllers and that companies with centrally configured computers are now looking at AT&T as the only viable alternative to IBM.

The change in user status within the industry must also be faced, according to Ludwig. "If one looks at the trends of the last five years in organizations, one would note that along with the proliferation of minicomputers and microcomputers, a shift of power is moving toward the end user. In the 1960s, in the mainframe era, a company like IBM could establish account control within a company. But now, with smaller systems making their way in, it is no longer sufficient to remain only in control of the central computer.

"Companies like Wang [Laboratories, Inc.] and Digital Equipment Corp. are also establishing control and bringing computer power to those outside of MIS. MIS cannot continue to cling to the central resource and ignore the end user," he warned.

Compatibility Key

Ludwig said that the technological advancements and improvements that communications and small systems bring are fine if they facilitate good information flow throughout a company. However, he said that there is a definite danger if myriad systems and technologies are scattered through a firm without compatibility.

"It is essential that MIS play a part in the combination of technologies. If you allow everyone in a company who has a little money to go ahead and buy their own little system, what you will wind up with is too many personalized systems.

"If this is the case and users are faced with incompatible systems, the company will find itself spending money on information tools so tied to one person that anyone new who tried to come in and use it would have to start from scratch. There wouldn't be any real contiguous, integrated information network at all," he observed.

There are certain paths MIS should take in jockeying for DP control, Ludwig noted. He said that the MIS department should perceive itself as the center of all information tools and that DPers should look at the move toward end-user computing as a trend that will give them an opportunity to coordinate information processing tools. He claimed that this is the time for DPers to establish a balance between end users and his area.

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Software Engineering Costs Topic of April DPMA Meet

LOS ANGELES — "Software Engineering Economics" will be the theme of the Data Processing Management Association's (DPMA) Educational Foundation seminar here April 18-19 and in San Francisco April 21-22.

Dr. Barry W. Boehm, chief engineer of TRW, Inc.'s Software and Information Systems Division, will discuss management planning and control, the development of a long-range software productivity program and effective life cycle cost estimating.

The two-day seminar costs $445 for DPMA members, $475 for others and $410 each for teams of three or more. More information is available from DPMA, Department SEE, Box 3608, Torrance, Calif. 90510.

Slated for May 2-4

Young to Speak at AIM Conference

WASHINGTON, D.C. — Atlanta's Mayor Andrew Young will be a featured speaker when the Associated Information Managers (AIM) holds its second annual conference will be based on the theme "Managing in an Information-Competitive World Economy."

Other featured speakers will include Desmond Hudson, president of Northern Telecom, Inc., and Richard S. Beal, special assistant to the president and director of the U.S. Office of Planning and Evaluation.

Some issues to be addressed include selecting the best software packages for an organization, impact and potential of personal computers in the office and designing professional/manager workstations.

The registration fee for AIM members is $300 before April 1 and $350 after that date. The fee for nonmembers is $400 before April 1 and $450 after that date.

AIM is located at 316 Pennsylvania Ave. S.E., Washington, D.C. 20003.

Applefest Set For San Francisco, Boston, Anaheim

CHESTNUT HILL, Mass. — Applefest, the annual conference and exhibition showcasing Apple Computer, Inc. and compatible products, is slated to take place in Anaheim, Calif., April 15-17; in Boston, May 13-15; and in San Francisco, Oct. 28-30. This event is being jointly sponsored by Apple and Northeast Expositions, Inc.

The Apple shows feature over 300 displays and booths, in addition to seminars, panel discussions, workshops and software spotlights, according to sponsors.

Tickets for Applefest cost between $8 and $48, depending on conference selection. Further details are available from Northeast Expositions, 826 Boylston, St., Chestnut Hill, Mass. 02167.

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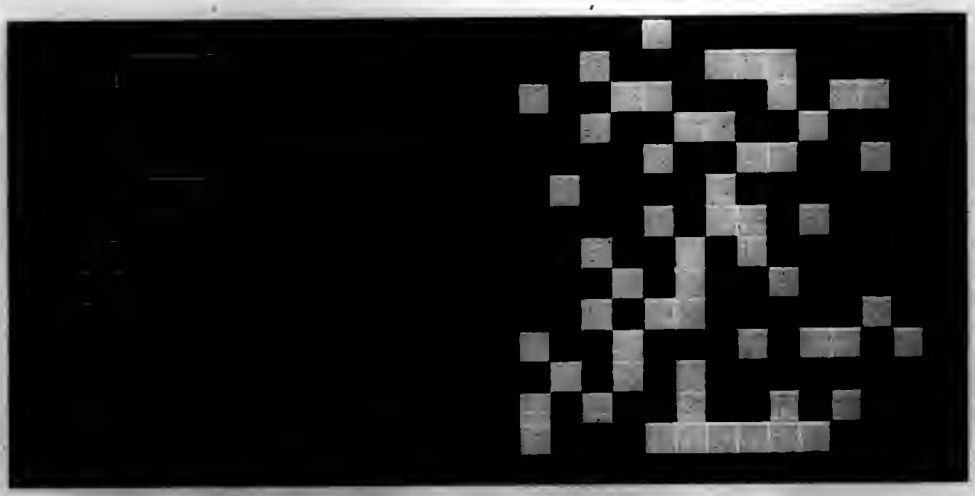

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Managers on the Move

GEORGE F. BORDER has been appointed senior vice-president of Corporate Information Resources for the Federal Home Loan Mortgage Corp., located in Washington, D.C. He will be responsible for the management of data processing, communications and office automation functions of the corporation, created by Congress in 1970 to develop and promote an active secondary mortgage market in residential loans.

Border formerly worked for Christian Broadcasting Network, Inc., as executive vice-president of finance and administration. Prior to that, he was director of information systems for the Copperweld Corp. and a manager of data processing for the Wheeling Pittsburgh Steel Corp. He served in the U.S. Air Force for 23 years.

Border has a bachelor's degree from Southwestern State, Okla., and a master's degree from George Washington University, Washington, D.C.

•••

KENNETH L. SCHARF has been appointed director of management information systems for Fisher Camuto Corp., located in Stamford, Conn.

Before joining Fisher Camuto, Scharf served as data processing manager at Hitachi Metals American for five years. Before that he was with Cornell Medical Center as manager of computer services at the hospital for special surgery.

Scharf holds an MBA degree from Fordham University and a BBA degree in Accounting and Data Processing from Pace University.

•••

PETER P. BLOZIS has been promoted to senior corporate director of information services and SHARON L. WHEELUS has been named corporate director of corporate systems in the Information Services Department of Harte-Hanks Communications, Inc. in San Antonio, Texas.

Prior to joining the company, Blozis was vice-president of the Information Sevices Division for H.J. Wilson, Inc. He joined Harte-Hanks in April 1981 as corporate director of information services.

Blozis earned both a bachelor's degree and a master's degree in computer science from Purdue University, Ind., and an MBA degree from the University of Rochester, N.Y.

Before joining Harte-Hanks, Wheelus was a senior analyst/programmer for Central Processing Center. She joined Harte-Hanks in July 1977 as an analyst/programmer, later serving as senior analyst/programmer and supervisor of corporate systems.

Wheelus is working on a bachelor's degree in accounting from the University of Texas at San Antonio.

George F. Border

Kenneth L. Scharf

Peter P. Blozis

Sharon L. Wheelus

RTUA Summer Conference To Focus on Automation

ST. LOUIS — "Automation: The Key to Information Processing Productivity" is the theme of the 1983 Recognition Technologies Users Association (RTUA) Summer Conference, which will take place here July 17-20.

Thomas Kamp, vice-chairman of business and technology at Control Data Corp., will keynote the RTUA conference.

Other speakers include Bill Moore, president and chief executive officer of Recognition Equipment, Inc; Bill Carter, vice-president and general manager of CAM-I; Capt. Grace Murray Hopper, U.S. Navy Reserves; and Robert Deffeyes, president and chief executive officer of Graham Magnetics, Inc.

Conference registration is $280 for member companies and $350 for nonmember companies; admittance to the exhibition only is free. Further details are available from RTUA through P.O. Box 2016, Manchester Center, Vt. 05255.

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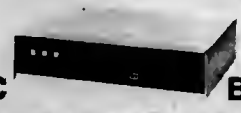

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Bank Goes In-House to Cut Processing Costs

LOWELL, Mass. — A thrift institution here has cut paper processing costs and boosted response time by switching to an in-house system with customized software.

The Lowell Five Cent Savings Bank is an approximately $200 million bank whose earnings consistently rank among the top 10% of Massachusetts mutual savings banks. One of the first such Massachusetts banks to use a computer service bureau in 1972, the bank last year decided it needed to gain control over its processing costs and service support, according to Robert Caruso, assistant vice-president of the bank.

"We were just one bank out of 50 to 100 using the Service Management Computer Corp. [in Boston], and we were getting a canned package as it existed," Caruso explained. "We felt it would be more cost-effective to go in-house." Other problems cited by Caruso included a need for software to handle simple interest loans and a poor response time during the bank's busiest time periods.

Meeting Various Needs

"From the beginning, we knew that the applications package we selected would have to not only meet our transaction processing needs, but also allow on-line management and financial reporting," he added.

Although the bank had built a computer room in 1978 and was using NCR Corp. 270 teleterminals, it did not have its own DP department. Because it was new to computing, management decided to buy a package to avoid having to hire "five to 10 to 15 programmers like some of the larger banks," Caruso said. Instead, the Lowell Five hired a DP manager to work with consultants from Atlantic Data Services (ADS) of Quincy, Mass., a consulting and software development company specializing in banking applications.

ADS worked up a complete request for proposal, including technical specifications such as VSE, Cobol and compatibility with the bank's NCR Corp. 270 teleterminals. ADS President Robert Howe explained that most bank applications are written in assembler, and the Lowell Five needed Cobol. Consultants from ADS narrowed a field of 15 to 20 prospective packages down to three, and the Lowell Five decided to purchase an IBM OS package developed by the former New York Bank for Savings.

Even though the package provided 90% of the banking features needed, it presented three problems. It did not have an integrated general ledger system; it had to be modified to comply with state banking policy and, and it required a major conversion to run in a DOS/VSE CICS environment, Howe said. The conversion process took 12 months, during which time ADS developed new proprietary software that the bank needed to compete, such as the general ledger package and a simple interest loan package. The system also includes an IBM processor control program, on-line history, up-to-the-minute transaction activity by branch, an on-line memo of each account and several levels of security and cash control.

Caruso estimated that 300 enhancements were made to the package prior to going on-line in June. The bank is in the process of training a bank employee to handle future programming needs.

The bank went to IBM for its hardware because it felt the industry giant had "the best support, prices and maintenance to meet our needs," Caruso said. The Lowell Five chose the 4331 system, with 1M byte of memory, mainly for its cost benefits, even though the firm knew it would have to modify its software to run on the machine, Howe said.

"As far as the branch operations were concerned, the most immediate benefit was great response time. Also, the information available on this system is tremendous," Caruso said.

As an example, he outlined the manual paper shuffle formerly used to follow an inquiry into a loan account. "We now have a complete on-line account history and can provide an immediate response to an inquiry. As a result, we are providing customers with better service."

Caruso admitted initial employee resistance was strong, but noted the bank was able to "get over that hump" via a policy of instituting major change from the top to the bottom rather than the from the bottom to the top. Plus, the bank decided to stay with its NCR teleterminals, thereby lessening the impact of the transition for employees.

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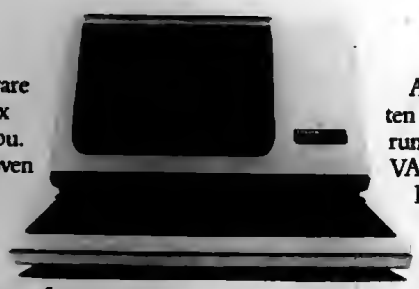

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Changes From IBM to NCR

Shipper Sails With System Upgrade

NEW YORK — To reap the expected benefits of its $320 million capital investment program, a Greek shipping company has upgraded its information management system with a system that reportedly allows it to track better its worldwide operations and reduce significantly its communications costs.

Because its DP abilities were limited by the capacity of its IBM System/3 and System/34, Hellenic Lines Ltd. purchased two NCR Corp. 8555 MP computers running under the VRX operating system to go along with a customized data base system. The new system is expected to cut the company's $25 million a year container leasing and damage costs by 10% and to expand its DP capabilities.

"We think the system also will be less labor-intensive, even though our volume is climbing," management information systems director Zeljko Gregov said. "It is expected to reduce cargo rating and billing errors, improve our service capabilities and our image with shippers and streamline port operations. But more importantly, it will give management up-to-date data that it can use to make sound booking and voyage decisions."

Gregov said the new system is a distributive one, requiring users to enter and verify their own data and accept responsibility for the output. Currently, staffers and booking agents use 69 NCR 796-501 CRT terminals and 33 NCR 6440 printers to access the data base.

Before it had the NCR system, Hellenic relied on the System/3 to print manifests and the System/34 to track its container vessels. "Limited capacity made the System/3 little more than a printing press that produced detailed charge summaries," Gregov said.

"For container tracking, information was received by telex and entered by keypunch operators. At best, this gave us data two to three weeks behind container movement."

In trying to decide from which vendor to buy its DP equipment, Gregov said it came down to selecting either IBM or NCR. After taking all the variables into account, Gregov decided to go with NCR because of its Total data base system and Tranpro software.

"Total is much less complex and costly than the alternatives we examined," Gregov asserted. "Because it provides an integrated system, Total allows us to update the entire system with just one record update. It also makes it easy to maintain programs already written. I didn't want my staff to spend 50% of its time rewriting programs," he said.

To appreciate what the data base has meant to Hellenic, Gregov asserted that one must know something about the advantages, costs and of containerized shipping.

Dual Advantages

Hellenic is converting three of its existing cargo ships to hold up to 1,200 containers each. As Gregov explains it, the ability to carry containers offers advantages to both shipping lines and their customers. One of the advantages to shippers is that they can load containers at their own factories or warehouses and seal them. The containers can then be transported by either truck, train or ship to their final destinations. Cargo in containers is also easier and faster to load than loose cargo, reducing carrier handling expenses as well as port loading and unloading time.

However, such benefits can only be realized if certain information problems, such as documentation, are solved. "Without customs documentation, a ship isn't allowed to enter port," Gregov noted. "We used to have difficulty getting shippers' bills of lading and preparing, processing and transmitting documents to meet these demands. With our new system, the documentation is always ready in advance," he added.

While the system has provided its benefits, bringing it up has not been free of problems. One of those problems has been obtaining telephone lines in some overseas locations.

"In the U.S., telecommunications are excellent and we've had few problems. In Europe and the Middle East, however, we had to fight to get lines. Anyone considering an on-line, international network should start trying to obtain lines at least a year in advance," Gregov counseled.

Gregov noted that long-distance phone lines — not DP equipment — represent the biggest system expense. "Telex was costing us $3 million annually," he pointed out. "By transferring 41% of telex traffic to our message switching system, we will pay for the lines. Everything above that is profit."

DBMS Newsletter To Debut in May

CHERRY HILL, N.J. — "Data Base Product Reports," a newsletter on data base management systems (DBMS), will be published beginning in May by Management Information Corp.

The newsletter will contain evaluations and analyses of DBMS implemented on mainframes, microcomputers and minicomputers. The publication will also contain a description of DBMS, a section on what to look for in a DBMS package, a list of available software systems and a monthly evaluation of new products.

Annual subscription orders received before May cost $195; after May, a one-year subscription will cost $225.

More information is available from the vendor at 140 Barclay Center, Cherry Hill, N.J. 08034.

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Firm Solves Space Problem With Dasd Tool

DENVILLE, N.J. — When a manufacturing firm here began to run out of room for additional disk drives, it decided the only solution was software that could manage its direct access storage device (Dasd) usage.

The result has been more efficient control of usage of Dasd resources, as well as the development of standards for this usage, Computer Operations Manager Paul Ashford reported.

Over the last four years, International Paper has exchanged 32 IBM 3330s for an installation of 110 IBM 3350s. "We were in such a rush to meet the demands of the data center that we were willing to ignore possibly inefficient or illegal uses of our equipment," Ashford said. "It became common for us to run Dasd nightly and shut down production to run a compress on the packs to create enough contiguous space," he continued.

The problem became even more severe as the data center continued to grow. The short-term solution of pack compression no longer helped, nor did the addition of more packs.

"To give you an idea of how severe our space problem was, we even ran out of floor space for any more packs," Ashford said.

Search for Alternatives

This created an unpleasant situation for the computer operations manager. Users were unhappy because they had trouble logging on, and management was unhappy with the high rerun costs and dissatisfied users. It was at this point that Ashford and his staff began looking for alternative ways of managing their Dasd environment.

"Our first step was to initiate a program which would tell us how our packs were being used," he said. "We could then plan a project which would help control this usage," the computer operations manager said.

Ashford looked at several software products, but decided on Pac/Master from CGA Software Products Group, Inc. because it met the firm's established criteria and fit into its overall Dasd management plan.

With Pac/Master in place, he was able to obtain a detailed report on how his disks were being utilized.

"We started by examining the disks to understand current usage techniques. We found that our disks were being used in any convenient way by any programmer who felt that he needed a disk file. Files were grossly over-allocated, poorly blocked and worst of all, many disk resident files were never even used," Ashford said.

When presented with evidence of how its Dasd resources were being used, the firm's management decided to attack the problem of Dasd management head-on. "After instructing our staff on the proper use of Dasd, we set standards and issued warning to our users during the first two weeks," Ashford explained. "The third week we enforced them.

"We explained to our users that we would provide the Dasd space they were crying for, but they were going to have to live by the standards we established," he continued. Under this arrangement, International Paper has been able to control its disk space to the point of achieving 40% or more free space pool, he reported.

These gains led to further tuning of the software. "We wanted to retain access to low-activity sequential files while storing them on a lower cost medium and releasing expensive disk space," Ashford explained.

The data center found that its current computer capabilities would enable them to do this. "We started using the Movet function of Pac/Master, which stacks cataloged sequential files on tape with proper recataloging while scratching the original disk file," he maintained.

Recovering Tracks

After the first enforcement of a standard using the Movet function, Ashford said his group was able to recover 240,000 tracks. Subsequent enforcements have re-claimed an additional 80,000 tracks.

"One user had reached the point of using 94,000 tracks by the time we instituted the Movet function," he maintained.

"One month after Movet was in place, this single user's disk requirements dropped to only 30,000 tracks. Since that time, his disk requirements have dropped to only 16,000 tracks. This is only over the course of six months," he said.

In addition, Ashford is able to examine the user's record of track usage from PAC/Master's history file and feed this information into an SAS Institute, Inc. Statistical Analysis System program.

"This flexibility allows me to analyze very specific user information as it relates to disk usage," the manager maintained.

With its Dasd management now under control, International Paper ironically now has the available floor space for more machines if it wants them."Because we've drastically reduced our disk requirements, we've sent a number of spindles back," he explained.

"Besides keeping our hardware costs down by not buying any more machines, we've been able to reduce our hardware budget by eliminating any unnecessary disks," the computer operations manager continued.

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CW 1.21

Agency Lists Models' Assets

Mini Helps Shape Fashion Success

By Jim Bartimo
CW Staff

NEW YORK — Most computer users are accustomed to dealing with a lot of figures, but booking agents at the nation's largest modeling agency deal with some 245 more familiar figures — those of the nation's top 170 female and 75 male models.

At Ford Models, Inc., the speed with which a model is booked to do an ad and an accurate record of his or her physical attributes have been identified as two important factors for success.

Who's Free

An Ultimate Corp. system comprised of a Honeywell, Inc. Level 6 minicomputer enhanced with a Pick & Associates, Inc. operating system "helps booking agents get charts on the models in front of them very quickly and helps them find who's free and who's not," the agency's president, Jerry Ford, said in a recent interview.

"We're in a business where people call up and ask, 'Is Christy Brinkley free?' or 'Is Cheryl Tiegs free?' Under the old system, it could take two hours to find who's free. Charts were always getting mislaid under someone's elbow," he said.

Now, "more than one person can look at the same chart, and the booking agents can handle two clients at a time," Ford said.

While scheduling has been improved, a more interesting application has also been automated. Under the old system, the models' physical attributes were rated on paper charts with descriptive notations such as "excellent legs."

The model's measurements were also noted, along with activities in which the model excelled, such as hiking, skating or skiing.

The vital statistics of 170 female and 75 male models are maintained on-line at Ford Models, Inc., where 32 agents can easily get at it for bookings. Also included in the data base are the activities at which each model excels and the model's schedule.

Booking Agents

All of this information — necessary when a client calls for a model who can perform certain physical activities for a specific type of advertisement — has been put into a data base that 32 booking agents can call up at any time on their own terminals.

"We have their characteristics rated from 0 to 9," Ford said. "Instead of rating legs, for instance, as 'very good,' the new system would say '7.'"

Or as one Ford employee put it, "It works like a travel agency, but instead of seat selection, we have body parts."

Ford started his modeling agency in 1946 and has wanted to install a computer system for the last 20 years.

"I had to wait for the cost to come down," he said. "Even at this point, no other agency can afford a system like this, and it will take a few years to know if it's cost-justified."

According to Ford, with software and enhancements, the system will end up costing the agency $175,000.

Industry Follower

Ford has been following the computer industry closely to identify ways to improve his agency. Before installing the Honeywell system, he programmed some elementary booking software on his Radio Shack TRS-80 at home.

Now, spoiled by the 250M bytes on the Honeywell system and specially designed order entry software from The Courage Group of New York, Ford is able to use a home terminal to dial into the agency's data base system.

The year-old system's response time tends to slow down from 4 to 4:30 in the afternoon — a daily peak use period when clients book models for the following morning.

Annual peak periods are March, April, August and September when spring, summer, fall and Chistmas ads are shot, according to Ford.

He said that when the system was installed, booking agents exhibited the usual user resistance. Now, however, "I don't think one person would let me take it away from them and make them go back to paper and pencil," Ford said.

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March 7, 1983

THE DUMBEST STAR IN HOLLYWOOD.

Our Dumb Terminal® video display constantly shows up in movies and TV shows. For the simple reason that it's virtually impossible to shoot a scene involving a computer without including the world's favorite independently-manufactured computer terminal.

This close encounter of the Dumb kind was submitted by Gerry Wade of Property Master. We're looking for other smart applications to use in our Dumb ads. Send us yours.

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Iris to Publish DEC Directory

WARWICK, R.I. — The Independent RSTS Users Society (Irus) has announced plans to publish a directory of Digital Equipment Corp. users and vendors. Scheduled to go to press June 1, the directory reportedly will be a source of hard information regarding who is out there and who uses what equipment and software.

It also will include listings of vendors, software and services.

Although intended primarily for Irus members and available to them at no charge, the directory will be made available to nonmembers for a yet undetermined price.

More information on the directory is available from Irus, Suite 4, 3657 Post Road, Warwick, R.I. 02886.

With Other Academic Institutions

Second System Lets College Share Software

CLARKSVILLE, Tenn. — Having successfully launched its computer science program with a 32-bit system four years ago, Austin Peay State University is about to add a second 32-bit system so it can share software programs with other academic institutions.

Austin Peay purchased its first Digital Equipment Corp. VAX-11/780 in 1979 to handle academic applications such as student programming and research. The system complemented the school's 14-year-old, secondhand IBM 360, which was dedicated to administrative applications. With the second VAX-11 now scheduled to take over the 360's administrative applications, the school has been able to add more terminals for administrative applications.

"Information needed by various administrative departments can be entered on-site by the person needing the information. This eliminates a computer center staff member punching in information, thus eliminating greater chance of error," noted Charles Wall, director of computer services.

Wall added that if errors do occur, they can be corrected more efficiently because users' corrections will be carried throughout the system.

DEC is donating six graphics terminals to the university to go along with the new VAX-11. They will be used to create charts and graphs for subjects as wide-ranging as chemistry, biology, marketing and psychology, Wall said.

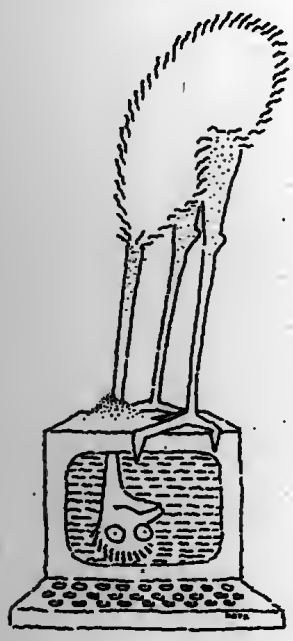
The growing number of new applications has forced the university to increase significantly its number of terminals. "We started out at zero terminals, then acquired 15 to use with the IBM 360. We now have more than 80 terminals on campus for use by students, faculty and staff," Wall said.

Shares Software

Besides being an administrative boon, the second VAX-11 machine's ability to share software with other schools will be helpful to Austin Peay students as well, according to Wall. "They will have more than a dozen computer languages available because schools are buying programs to complement but not unnecessarily duplicate one another," he explained.

Austin Peay officials claim their school's decision to go with the VAX-11/780 four years ago, which was the first VAX-11 system installed in Tennessee, has influenced the State Board of Regents to recommend that other state universities and community colleges install VAX-11 systems as well.

Replacing the 360 with the second VAX-11/780 is not without its installation problems, however. According to Wall, the process involves more than just unplugging one computer and plugging in another. Wall will have to incorporate an improved cooling system, increase the number of programs and retrain his computer staff to maintain properly the new system.



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Data Dictionary, DBMS Guides Out From QED

WELLESLEY, Mass. — QED Information Sciences, Inc. has published a data dictionary evaluation guide and a data base management systems (DBMS) evaluation guide.

"Information Resource/Data Dictionary Systems," by Henry Lefkovits, Edgar Sibley and Sandra Lefkovits, presents an in-depth description of the current uses and features of today's data dictionary systems.

Systems described in detail include the following: IBM's DB/DC Dictionary; MSP, Inc.'s Data Manager; Cullinet Software, Inc.'s IDD; Applied Data Research, Inc.'s Data Dictionary; University Computing Co.'s UCC 10; and Haverly Systems, Inc.'s DCS.

"Data Base Management Systems for the Eighties" by Shaku Atre treats the following: IBM's IMS/VS and SQL/DS; Cincom Systems, Inc.'s Total; Software AG of North America, Inc.'s Adabas; Intel Systems Corp.'s System 2000/20; Applied Data Research's Datacom/DM; Computer Corp. of America's Model 204; and Cullinet Software's IDMS.

Each report costs $95. QED Information Sciences can be reached through P.O. Box 181, 180 Linden St., Wellesley, Mass. 02181.

Free-Lance Programmers Issue Newsletter

VIENNA, Va. — The National Association of Free-Lance Programmers (NAFLP) has begun publishing "Software Market Letter," a monthly newsletter for its members.

The newsletter is intended to provide free-lance programmers with software marketing information and advice, including the type of software in demand, how and where to sell programs and how to obtain free-lance programming contracts.

Included in each issue is a directory of software buyers as well as "informative and tutorial articles," such as how to sell software directly, how to save on expenses and taxes and how to reduce business liabilities.

The annual cost of a membership in NAFLP, which includes subscription to the newsletter, is $48. The association can be reached at Box 813P, Vienna, Va. 22180.

Cray Research's Loftis To Keynote AWC Meet

ANAHEIM, Calif. — Margret Loftis, vice-president of software development for Cray Research, Inc., will keynote the Association for Women in Computing's (AWC) second annual national conference here May 15. Loftis led development of the first Cray operating system delivered to the National Center for Atmospheric Research at Boulder, Colo.

The theme for the conference will be "Women Emerging in the Information Age." Open to the public, it costs $30, but there is a $5 discount before April 15.

More information about the conference is available from Kathy Bruce, 1317 Church St., San Francisco, Calif. 94114.

Schools, Wang to Offer Summer Tech Classes

Summer classes are being offered by the Eastern and Western Institute in Computer Science through the Wang Institute in Tyngsboro, Mass., and the University of Santa Clara and Stanford University in California.

Classes at the Wang Institute include compiler construction, managing and engineering software, interactive computer graphics, data models and user interfaces, software management decisions and implementation of relational systems.

The University of Santa Clara is offering a course in data base management; both the Wang Institute and the University of Santa Clara are offering courses in operating systems and software engineering principles.

Courses at Stanford include data base management systems, distributed systems, compiler construction/programming language translation, theory and practice of expert systems and code optimization and generation.

The four-day classes run from May through August. Enrollment for most classes is $850.

More information on the Massachusetts classes is available from the Wang Institute of Graduate Studies, Tyng Road, Tyngsboro, Mass. 01879; information on western classes is available from the Western Institute in Computer Science, P.O. Box 1238, Magalia, Calif. 95954.

Guide Lists Education For WP

WILLOW GROVE, Pa. — The International Information/Word Processing Association (IWP) has published an enlarged and updated version of its *Reference Guide to Information/Word Processing Education.*

Included in the publication are sections covering sample word processing curricula, methods of integrating word processing into present courses, notes on professional writing, sources of federal funding for information/word processing equipment, institutions offering word processing education and a word processing supervision/management curriculum.

The 160-page reference guide costs $10 plus $2.50 postage and handling from 1015 N. York Road, Willow Grove, Pa. 19090.

Unix Course Video-Based

CHICAGO — The Computer Technology Group of Telemedia, Inc. has announced a video-based training course on Bell Laboratories' Unix.

Called "Unix Fundamentals," the course's 15 video modules cover topics including communicating with the system, communicating with other users, files, 'ed,' pathnames, directory commands, commands, I/O, command lines, file access permissions, file name generation and advanced 'ed.'

Over 30 of the most frequently used commands are explained and illustrated, according to a spokesman. Screen examples are shown, followed by hands-on exercises.

The package of 15 modules costs $5,250 from Telemedia, 310 S. Michigan Ave., Chicago, Ill. 60604.

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TeleVideo's full line of 8- and 16-bit microcomputers is in stock at DJC. Both single- and multi-user systems feature dedicated CPU and RAM for each station, resulting in true distributed parallel processing, even for separate applications. These CP/M-based systems, including the new 803, open the broadest selection of application software to your business.
TeleVideo also offers a variety of mainframe access protocol emulation, combining remote distributed processing to IBM hosts with locally executed CP/M applications.
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Send for DJC's terminal comparison chart, as seen in Computer Decisions.
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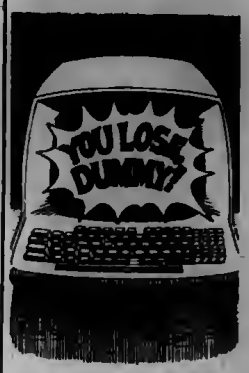

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Application Development Tool Speeds Sales Forecasting for Electronics Firm

CANOGA PARK, Calif. — The electronics firm's management systems staff bore the full brunt of procedures that eight years ago were far from fully automated. Each month, the staff faced the task of manually recording, consolidating and verifying the sales forecast figures for seven separate divisions. After the forecasts, the staff had to repeat the process with actuals.

This effort took on heroic proportions considering the size of Hughes Aircraft Co., a high-technology electronics firm, and the volume of data involved. In 1981, annual sales totaled $3.1 billion with a payroll of $1.3 billion for 60,000 employees worldwide.

"Before we automated our procedures," recalled Leno Petteys, management systems specialist in charge of financial applications, "the consolidation of sales figures for seven divisions was a massive effort. We had to work all the figures up on spreadsheets, then telephone the data to corporate [headquarters], where they would manually consolidate all the numbers. Since there wasn't time to use the mail, data verification had to be done on the phone as well.

"It finally became obvious: We had to computerize."

Chosen for Flexibility

The DP staff began developing a relational data base management system using Cortex Corp.'s Inform applications development system. According to Richard Allen, the data base analyst who wrote Hughes' first Inform programs, the development tool was selected because it was able to use table data bases to build data relationships. It also had the flexibility offered by global variables and the self-contained language that made for ease of use.

Allen said these features have withstood the test of time and have been coupled with a number of enhancements that make the tool an appropriate data management software system.

As Inform was being developed at the time Hughes began using it, Allen's department was able to receive enhancements tailored to its individual needs. Included in those enhancements, he said, are a greater ease in working between users, a processing capability that allows data to be written directly to the end of a file and the ability to perform a direct-access table search that eliminates the need for expensive sequential processing.

Inform also allows the creation of command files that enable nontechnical personnel to perform DP functions.

Hughes' personnel has since been able to build its own table of financial data that an Inform program can quickly access, verify and consolidate with other related tables, Allen said. The task of writing programs was simplified by Allen's option to use global variables — information that can be stored outside a data base and used whenever a given processing situation requires it.

Allen said it is Inform's ability to use tables to create a relational operating environment that makes it so powerful, while Petteys stressed its ease of use, saying it is "simpler than Basic.

"It doesn't require any training; it's that easy to use," Petteys said. "In fact, I have only two or three people here who know the Inform commands. Our early programs, which are seven years old now, are basically self-driven. And the new procedures we have automated can be easily handled by nontechnical personnel."

Guide Details CAD/CAM

ARLINGTON, Texas — The Office of Continuing Education of the University of Texas here is offering a matrix of about 190 computer-aided design and manufacturing (CAD/CAM) system attributes from approximately 40 vendors.

The 400-page *CAD/CAM Presentation Resource Guide* covers CAD/CAM graphics systems, group technology, computer-aided process planning, numerical control, manufacturing management systems, robotics and automated storage and retrieval systems, the university said.

The publication costs $125 and can be obtained by writing to the Office of Continuing Education, University of Texas, P.O. Box 13635, Arlington, Texas 76013.

Micro Course Gets '83 Training Award

CHICAGO — Arthur Andersen & Co.'s "Introduction to Microcomputers/Using Microcomputers in the Business Environment" course received the first Exemplary Training Program for 1983 award at the recent Association for Educational Communications and Technology convention.

The consulting firm's two-day training program is periodically conducted in major cities around the country as well as in-house.

Further details on the program can be obtained from Arthur Andersen at 69 W. Washington St., Chicago, Ill. 60602.

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Records Manager Supports Utility's Growth

MIAMI — In the utility industry, an effective records management system can not only help improve productivity, but can keep overall costs down.

Take, for example, Florida Power & Light Co. (FPL) here. FPL deals with a staggering amount of paperwork because of its complex accounting procedures and reporting duties resulting from stringent government regulations. The utility, which has 473 work sites and serves 2.2 million customers, must often produce and retrieve these records instantaneously.

"We have a lot of people who, because of the many regulations, have to handle a lot of paper. We often find roughly 20% to 30% of a department's paperwork can be thrown away. It's mainly duplicate copies, information type copies," Dennis Morgan, FPL's manager of corporate records services, explained. "Another 20% to 25% we can consign to low-cost storage areas."

FPL hopes to make jobs less labor-intensive "by providing information in the fastest way possible," Morgan said. "I foresee the time when many people working with information will have their own terminals at their desks where they can key in and get the data right off the CRT rather than run all over the department looking for it."

To reach that point, however, "you have to first establish the data base, establish retentions, film the records, index them properly and fit them into the system for quick, accurate retrieval."

For FPL, 1978 was the year to begin attacking its paper problem (it still sees itself in the "early stages of [the] process"). After determining the feasibility of a records retention program and the cost benefits of a corporate, centralized micrographics facility, FPL turned to Florida Computer, Inc. (FCI) here, a software development firm.

Consultations resulted in a software system that interfaces with FPL's 3M Corp. 16mm reader-printers, a Digital Equipment Corp. PDP-11/44 minicomputer and VT100 CRT terminals for computer-assisted retrieval and duplication of microfilmed documents. FPL had acquired DEC equipment primarily because DEC offered local service for both hardware and the digital software, Eugene Sands, senior records analyst, explained.

FCI's software includes a data entry subsystem, query language and report writer. Since the software also works with fiche retrieval units, requires no hardware modifications and is compatible with most DEC operating systems as well as 3M and Kodak Corp. equipment, the package offered a great degree of flexibility, according to FCI President John H. Wright.

In an attempt to unify the FPL records system, Morgan is directing a five-year records plan including a uniform filing system, relative index, retention schedule and vital records programs for the entire company.

Rather than trying to "retrofit" the millions of microfilmed company records, Morgan's initial objective is to establish new department records systems that will handle the normal 10% to 15% annual record growth rate. One key area of activity is the nuclear division, which makes the most rigorous records demands on the utility.

The state's three operating nuclear power plants now have more than two million records filmed and indexed with an annual increase of 25% in 1980. Another million await microfilming at a plant under construction.

Approximately two 16mm cartridge rolls of 2,500 frames each, along with the 3M automatic page search units, are being used weekly for filming at the three operating plants. This allows for microfilming of about 5,000 pieces of paper per week per plant.

FPL is just beginning to move into the computer output microfiche capabilities provided in the FCI software as a backup to the on-line computer-assisted retrieval.

Catalog Describes Micro Software Uses

CHICAGO — The Software Division of Semiconductor Specialists, Inc. has published a free catalog describing systems and applications software for microcomputers.

The catalog includes a classification and description of available products and a listing by operating systems and formats. Included is software for Digital Research, Inc. CP/M and CP/M-86 and for the IBM PC-DOS operating systems.

Copies are available from Semiconductor Specialists, P.O. Box 66125, O'Hare International Airport, Chicago, Ill. 60666.

"Improve performance, save time, cut costs by developing on-line applications with CYX"

Norfolk and Western Railway's CYX-based Norfolk Coal Inventory System works out the complex logistics of preparing and routing coal orders, helping the NW to break monthly coal dumping records.

By using CYX to build the Fully Integrated Reservation System for Travel (FIRST), Tymshare, Inc. cut months out of their production schedule — time that would have been spent developing their own untested transaction processing system.

Union Carbide's new Material Acquisitions Data Processing System is relying on CYX to economically distribute transaction processing capabilities to chemical plants across the country.

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System Manages Growing Accounts

Builder Puts Credit Collection Faith in Software

SEATTLE — When annual sales at Northwest Builders Hardware jumped from $300,000 to $8 million, the firm's officials decided it was time to look for a computer system to manage credit collections and accounts payable functions.

A wholesaler of building supplies for large contractors that construct high-rise buildings, schools and multihousing projects, Northwest Builders wanted a system that would help it collect outstanding debts and allow it to format its own accounting reports. It also wanted a system that would enable it to prepare quickly bids for large materials contracts.

Operating on the theory that strong software is more important than hardware, Northwest Builders purchased a specialized system developed by TOM Software, Inc. and designed to operate on Wang Laboratories, Inc. hardware. Northwest Builders' configuration consists of a Wang 2200 MVP processor with 384K bytes of main memory, 83.8M bytes of disk storage, a 300 line/min printer, three matrix printers and a daisywheel printer. The firm recently added two remote job entry terminals to the system.

The software includes TOM's Distributor Business Management System, the firm's Data 3500 word processing package and its Record Management System package. The distributor system is comprised of modules for accounts receivable, order entry, sales analysis, bills of materials, costing, inventory control, accounts payable, purchase orders, general ledger and fixed assets accounting.

Before buying a system, Northwest Builders developed an outline of the features it wanted. According to Northwest Builders Vice-President Bob Hubbs, the system configured by TOM software met the firm's needs and offered additional flexibility and word processing features.

Word Processing Features

The word processing features were particularly useful in securing a $300,000 Saudi Arabian contract. "Our bid packet, with itemized quotations and other materials, was 40 pages. And we went through nearly 50 revisions as they requested changes. With every change, our customer wanted five bound documents," Hubbs said.

"Because it was set up on our computer system, we were able to respond overnight. Delivery time was critical to our customer, and we were awarded the contract even though our prices were not necessarily low all the way through," Hubbs maintained.

The system has also improved Northwest Builders' ability to take advantage of discounts available by paying early on some purchases. Hubbs explained that when items are entered into the system, the date on which a discount offer expires is also entered, making it easier to spot those accounts.

The accounting system also allows Northwest Builders to develop specialized accounting files. For example, Hubbs said, balance sheets can be designed with varying column widths and headings to accommodate detailed accounts, according to Hubbs.

"We didn't have to make our balance sheet conform to someone elses' idea of how we should run our business," Hubbs said.

"For a small business to have a workable and meaningful computer installation, you need someone who speaks for the ownership of the company and can make independent decisions," Hubbs continued. "That doesn't mean they have to manage all the input, but they have to serve as coordinator of the program and take an interest, as well as understand what the system is doing and how it does it.

"The computer installation is worth the investment of management and commitment. Installation of the right software and hardware system is probably the key to the future of your company," Hubbs concluded.

AIM Releases 1982 Survey On Data Centers

CHICAGO — The Association of Information Managers for Financial Institutions (AIM) has released the 1982 "Thrift Institution Automation Survey." The 300-page survey describes 536 data centers serving thrift institutions nationwide.

The survey includes hardware, software, staffing and applications information about in-house data centers and independent service bureaus that provide on-line deposit and lending services.

Seven cross-references categorize the survey alphabetically, geographically and by number of accounts received. Manufacturers and models of CPUs, automated teller machines and minicomputers are also categorized, a spokesman said.

The survey costs $50 for AIM members and $200 for nonmembers. AIM is a division of Financial Managers Society for Savings Institutions, Inc., 111 E. Wacker Drive, Chicago, Ill. 60601.

Administrator Named for Ansi

NEW YORK — Joan Gardulski has been named program administrator for the Information Processing Systems Department of the American National Standards Institute (Ansi).

Gardulski will administer the secretariats of a number of subcommittees of the International Standards Organization (ISO), a major international body. Ansi is the U.S. member of ISO.

Gardulski will be responsible for four subcommittees of ISO Technical Committee 97, Information Processing Systems: programming languages, flexible magnetic media, instrumentation tape and representation of data elements.

In addition, she assumes responsibility for a subcommittee on data elements and interchange formats of ISO Technical Committee 154, Documents and Data Elements in Administration, Commerce and Industry. She will also provide staff support to Ansi's Information Systems Standards Board.

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Firm Builds Up Profits With In-House System

EL SEGUNDO, Calif. — The need was apparent — to provide timely and accurate computer printouts on commercial building projects to branch offices and to computerize operations throughout the home office.

But the question for Continental Development Corp. rested in what means should be chosen to accomplish these ends: in-house computer or service bureau?

According to Charles Robbins, controller for the commercial building development firm, the San Francisco office needed to access special computer reports on projects and property management from the home office here.

The service bureau concept gained initial favor, according to Robbins. But after carefully researching methods of automating his office and seeing "at least a dozen" other vendors before making his final package selection, Robbins recommended that the building development firm buy a Basic Four System 410 from Basic Four Information Systems Division of Management Assistance, Inc. (MAI).

Combination of Support

"What MAI/Basic Four offered was a combination of hardware and software support that I just didn't find offered by other computer manufacturers," Robbins said.

"In the beginning, I pushed for a service bureau, but the MAI presentation was very impressive and I changed my mind," Robbins continued.

In addition to its use in project management, the Basic Four minicomputer system is used in property management, word processing and general accounting applications including check preparation, according to Robbins.

End-of-the-month financial statements that formerly took two weeks to prepare manually now take a day, and project managers can immediately access information on job costs, information that used to take two or three days to obtain, according to Robbins. And the reports are generated more accurately than before, the controller maintained.

Installed 18 months ago at a cost of about $85,000, the system includes four CRT display terminals, 120K bytes of main memory, a high-speed 58M-byte fixed disk drive, a magnetic tape cartridge drive and a bidirectional printer.

Chose Four Modules

Continental chose four of the software modules that are developed and distributed by MAI Applications Software Corp., including general ledger, property management, job cost and accounts payable.

The company has seven people trained to use the systems. Robbins, who has a terminal on his desk, maintained, "I'd worked with a computer before, but it was primarily through a service bureau, not with a terminal on my desk.

"The system is easy to use and the application software prompts you through what needs to be done by giving the operator simple commands," he added.

Robbins said the primary benefit of his in-house system has been enhanced project control, resulting in an "appreciable" improvement in the firm's profits. The increased profit potential, he said, "easily covers the cost of conversion many times over."

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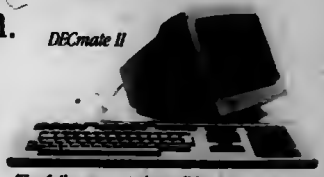

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Manufacturer Cleans Up With MRP System

CHICAGO — Selfix, Inc. is in a sticky business. The manufacturer of self-stick kitchen and bathroom items claims it owes most of its success to an automated materials planning package, which brought the firm from a batch-oriented environment to an on-line system.

Selfix makes about 450 items, ranging from soap dishes to toothbrush holders. Under the direction of Gene Schwarz, vice-president of manufacturing, Selfix has spent the past 10 years developing the materials requirements planning (MRP) system that controls the entire manufacturing process, except for production scheduling. Schwarz said the MRP system has allowed Selfix to handle a twentyfold increase in sales without having to increase manufacturing personnel.

Until April 1982, the MRP software ran in a batch mode on an IBM 370/125 mainframe. Schwarz said Selfix decided that in order to provide better control and speed up operations, the MRP — as well as other applications such as order entry, accounts receivable, accounts payable, sales statistics and payroll disbursement — had to be put on-line.

Schwarz explained Selfix wanted a system that could be expanded to accommodate expected company growth. The system also had to be portable — meaning Selfix wanted to use the Chicago system as the basis of a similar system at its sister manufacturing facility in England.

Schwarz said Selfix looked at the possibility of upgrading the 370/125, but decided the 3370 line did not meet its requirements. Instead, the firm decided to purchase a Wang Laboratories, Inc. VS 100 32-bit processor. The VS 100, which is configured for redundancy, features 512K bytes of main memory, two 300M-byte and two 80M-byte disk drives, two 600 line/min printers and 10 workstations, according to Ross Gosnell, management information systems manager.

Major Conversion Needed

"A major conversion was required, of course, but it was made relatively easy through a conversion package designed for converting Cobol and RPG programs on a mass basis," Gosnell recalled. "Our staff consists of only two programmer analysts who are dedicated to developing application programs for our user departments." Gosnell added that the firm was able to convert to the Wang system without having to hire a more expensive systems programmer.

At the same time it installed the VS 100 at its Chicago plant, Selfix also installed a Wang VS 80 processor in its UK manufacturing plant. That three-workstation system is equipped with two 80M-byte disk drives and is capable of executing all applications developed on the Chicago VS 100, Gosnell said.

Selfix has developed 750 programs and 225 procedures for integrated on-line applications such as order entry. The company purchased its accounts payable, accounts receivable, general ledger and asset depreciation packages from Minicomputer Busless Applications, Inc.

The firm's MRP software is still operating in a batch mode on the Wang system; however, the MRP master files are on-line. The firm is currently developing a fully on-line MRP system that is scheduled to be functional by mid-'83, Gosnell said.

The on-line MRP system will include 2,000 bills of material containing 17,500 components and raw materials, 5,500 stock status masters representing finished goods, work in process, raw materials and a materials cost package, Gosnell said.

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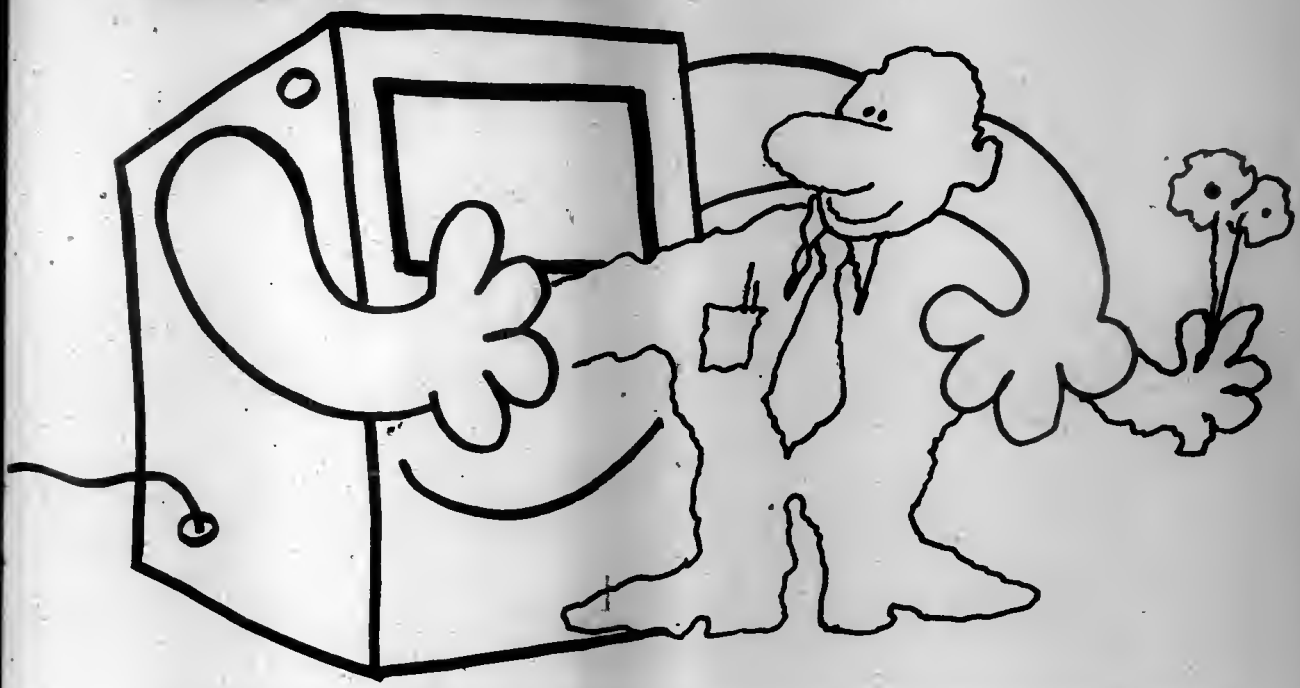

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Week of April 3

April 5-7, Chicago — **Computerized Office Equipment Expo.** Contact: Cahners Exposition Group, 1350 E. Touhy Ave., P.O. Box 5060, Des Plaines, Ill. 60018.

April 5-7, Chicago — **Structured Testing.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

April 6-8, San Francisco — **Structured Analysis and Design.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

April 7, Palo Alto, Calif. — **California Computer Show.** Contact: Norm DeNardi Enterprises, Suite 204, 289 S. San Antonio Road, Los Altos, Calif. 94022.

Week of April 10

April 11-13, Dallas — **Systems Network Architecture and Implementation.** Contact: Communications Solutions, 992 Saratoga-Sunnyvale Road, San Jose, Calif. 95129.

April 11-13, Washington, D.C. — **Effective Data Systems Development.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

April 11-13, Los Angeles — **Structured Very Large-Scale Integration Design.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

April 11-13, Washington, D.C. — **Capacity Planning.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

April 11-14, Philadelphia — **National Micrographics Association (NMA) Conference and Exposition.** Contact: NMA, 8719 Colesville Road, Silver Spring, Md. 20910.

April 11-14, Tokyo — **Intergraphics '83.** Contact: World Computer Graphics Association, Inc., Suite 399, 2033 M St. N.W., Washington, D.C. 20036.

April 11-15, Santa Clara, Calif. — **SMP Maintenance Workshop.** Contact: Amdahl Education Center, 1250 E. Arques Ave., M/S 302, Sunnyvale, Calif. 94086.

April 11-15, Columbus, Md. — **MVS Measurement and Tuning.** Contact: Amdahl Education Center, 1250 E. Arques Ave., M/S 302, Sunnyvale, Calif. 94086.

April 11-15, Atlanta — **Structured Systems Design/Structured Requirements Definition.** Contact: Gayle Giesecke, Ken Orr & Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

April 11-15, Chicago — **CICS Macro-Level Programming.** Contact: Sysed, Inc., One Park Ave., New York, N.Y. 10016.

April 11-15, Boston — **CICS Command-Level Programming.** Contact: QED Information Sciences, Inc., QED Plaza, P.O. Box 181, Wellesley, Mass. 02181.

April 11-15, Seattle — **Auditing in the Contemporary Computer Environment.** Contact: Marge Umlor, Electronic Data Processing Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

April 11-15, Washington, D.C. — **CICS/VS Command-Level Programming.** Contact: Applied Technology Associates, Inc., Suite 1418, 1710 Goodridge Drive, McLean, Va. 22102.

April 11-15, New York — **Data Base Management System.** Contact: Workshop Coordinator, Software House, 1105 Massachusetts Ave., Cambridge, Mass. 02138.

April 11-15, New York — **Vsam File Management and Programming.** Contact: Rosa Roseto, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036.

April 11-15, Piscataway, N.J. — **CICS/VS Command-Level Applications Programming.** Contact: Rosa Roseto, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036.

Week of April 17

April 18-20, Tampa, Fla. —**Network Communications Protocols.** Contact: Center for Advanced Professional Education, Inc., 11928 N. Earlham, Orange, Calif. 92696.

April 18-21, St. Paul, Minn. — **Project Management.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

April 21-22, Washington, D.C. — **Software: A Legal Briefing for DP Professionals.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Week of April 24

April 25-26, Cincinnati — **Software: A Legal Briefing for DP Professionals.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

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Best regards,

John A. Sasso
President
Esprit Systems, Inc.

EDITORIAL

Bucking a Trend

Budget fever struck DP with a vengeance in two northeastern states recently. Ironically, however, the proposed budgets would have very different results.

In New Hampshire, newly elected Gov. John H. Sununu, an avowed fiscal conservative, proposed that the state dismantle its central DP facility this summer and distribute processing power to the individual state departments [CW, March 14]. The governor argues that DP is a bureaucratic liability whose functions could be handled more efficiently at the local level.

In New Jersey, meanwhile, Gov. Thomas Kean proposed a very different solution to what he called an "outdated and inefficient method of processing information." Kean wants to spend $20 million to modernize the state's decentralized computer system, to enhance communications between New Jersey's five major data centers and to establish a central Office of Office Automation [CW, March 14]. Kean's request states that New Jersey's current DP structure is expensive because departments are paying to maintain redundant data.

Which state has the inside line on DP efficiency? That question can only be answered by time.

The trend in DP today — obviously endorsed by New Jersey's Kean — is toward integration of computing systems. Communications compatibility is high on the DP manager's wish list, as is the desire to retain central authority in an environment that is feeling pressure to decentralize from microcomputer-smitten end users.

Sununu has elected to buck that trend. Why? One New Hampshire user said the move to fragment DP grew out of an independent study that found that users were critical of the power concentrated in the state's central DP department.

That should set off a warning bell in the mind of any DP manager who has wrestled with end-user resentment. While it is true that distributed computing offers autonomy, it also offers distributed headaches. Will end users find they can operate a DP facility more efficiently than a trained staff? Or will they find themselves calling those same professionals to solve their problems at the local level?

In New Hampshire, data processing has been made a showcase by a conservative governor who wants to wield a visible budget-chopping ax. But we question whether users there will find the alternatives to a central DP facility less expensive or less frustrating.

It will be interesting to check back a year from now to see if New Hampshire, in bucking a trend, has actually set one of its own.

DATA PAST

Five Years Ago
March 20, 1978

FLUSHING, N.Y. — A former student at Queens College admitted awarding himself unearned Phi Beta Kappa status in 1975 by tampering with the school's computerized grade records system.

Also examined was "hard, irrefutable evideoce" that grades were changed for 12 to 15 other students by the same person.

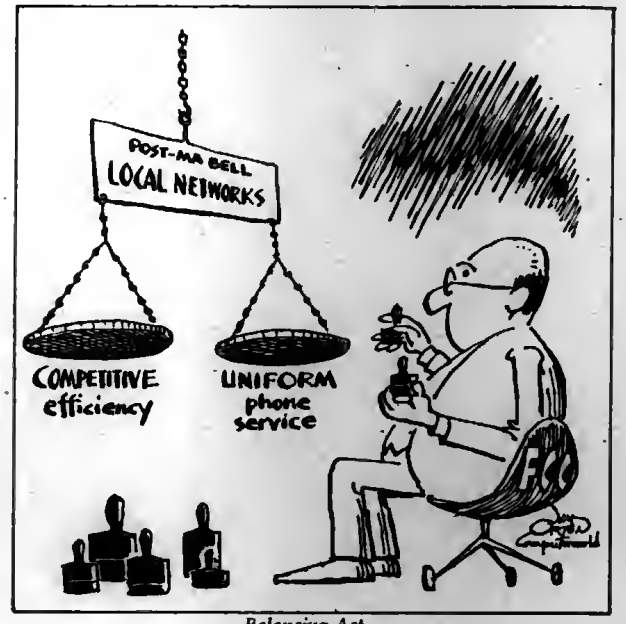
The grade changes, allegedly made between 1974 and 1977, were not discovered until January 1978, during a routine manual audit by faculty members.

Ten Years Ago
March 21, 1973

WHITE PLAINS, N.Y. — IBM unveiled the long-expected 370/115 as an entry-level machine — to the "virtual memory" 370 series — for use of IBM System/3s and smaller 360 models.

A new disk device — the 3340 direct access storage facility — and the 3203 printer were released concurrently with the 115.

The product announcements were in keeping with efforts to facilitate moving into the 370s with little or no reprogramming of existing applications, an IBM spokesman said.



Balancing Act

LETTERS

'No Mystery, No Magic'

The In Depth article "Data Is Money" [CW, Feb. 14], while excellent in many respects, unfortunately generates considerable semantic and conceptual confusion.

Central to this confusion is the article's failure to make clear that "money," that is, the money supply, is the sum of currency and demand deposit account (DDA) balances. The latter, comprising checking accounts, is referred to as "bank money." Commercial banks can create only bank money, not currency money. I think these distinctions will clear up the article's confusion about the bank's disk tracks being the focus of an account's "money."

A bank maintains some handy currency reserves in its vault, or till, and more with the Federal Reserve Bank. Call the combined proportion of DDA balances kept in reserves by each bank in the system r. Then 1-r of any given deposit to a DDA will be lent out and become another DDA deposit somewhere of which 1-r will be lent out and so on.

It can easily be shown that this geometric progression leads to the creation of 1/r more dollars of DDA deposits — that is, bank money — from the original dollar deposit which, in effect, is a dollar of currency money taken out of circulation and put in reserves.

For example, if commercial banks maintain 20% reserves at the Federal Reserve Bank and 2% in the till, r=.22, and the multiplier 1/.22=4.55. Then, for each new $1 deposited in a DDA, the system of commercial banks will ultimately create $4.55 in new bank money. If no reserves are required (r=0), a theoretically infinite amount of bank money could be created, whereas if 100% reserves are required (r=1), no new bank money can be created. Clearly, bank money creation is simply a leveraging of currency money reserves.

The bank's disk field *amount* in customer DDA account records stores a customer's bank money balance, that is, the amount of currency money that the bank is obligated to give him if he insists. That currency money is located in the bank's till in the basement — not on disk tracks.

Inasmoch as the probability of all the bank's customers insisting on conversion of their bank money balances into currency money at the same time is very, very low, the bank maintains correspondingly low currency money reserves against the sum of all the bank money balances recorded on disk. But if anybody does want his "money" — currency money — he'll find it in the basement — not on disk! No mystery. No magic.

The illusinn promoted by the article is an example of an old epistemological problem, namely, the problem of confusing representations of reality with reality itself. All that is ever "on" disk are physical states of matter electromagnetically oriented to represent characters invented and patterned by man to represent realities external to the disk. Representations of account credit balances must tie back somewhere to the reality of acceptable physical stores of value: currency.

To maintain worldwide validity of electromagnetic representations of millions of electronically implemented financial transactions is a monumental problem.

It will never be satisfactorily resolved, however, unless the underlying economics and epistemology are appreciated.

Stephen E. Seadler
President

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New York, N.Y.

LECHT ON SCIENCE/Charles P. Lecht

A Robot for Baby, a Hologram for Dad

In my opinion, the computer system (under which rubric I include communications subsystems) exceeds in importance anything yet invented by man. As a vehicle for the delivery of artificial intelligence, it has the power to alter our perception of reality — perhaps I should say the scope of our reality — by acting upon its wellspring: the human mind. Indeed, it seems to represent one of those rare quantum leaps in our evolutionary history that has forced the human mind to transcend its apparent limits simply to keep pace with the product of its own creative ruminations.

From the mere delivery of numbers otherwise impractical to obtain to the creation of holographic imagery indistinguishable from the underlying real stuff, the computer system improves upon our natural cognitive powers of logic, computation, association and memory in ways no less impressive than the ways in which our physical abilities were altered by engines.

In fact, there is no reason not to label modern computer systems "artificial intelligence engines." Their multiplicative and extensional effects upon our biologically based minds closely parallel those exercised upon our natural physical prowess and staying power by artificial strength delivery systems like the engine. And the engine's amplification of our ability to lift, move, pull, push and otherwise massage physical reality has immeasurably improved our chances for survival.

There was a time when people yearned to have engines all to themselves, after years of having been compelled either to share them with others or simply to make do without them altogether. Sooner or later, everyone who was anyone acquired (at least) one; many got some, some got many, and a few even wound up with quite a few. Engines evolved from trivial contraptions into magnificent multipliers of human strength as this process of dissemination continued to unfold.

Daily Operation

Nowadays, we have so many engines that we can scarcely avoid having to operate one each and every day, be we man, woman, child or laboratory rat. Access to engines has even trickled down to the paradisiacal crawl space of babydom. It is wholly unremarkable to find the modern moppet operating some simple species of engine, perhaps in the guise of a toy, before he has attained the statutory right to blow out his first, solitary birthday candle.

Setting aside the earliest, essentially experimental breed of engines, the distribution of the power introduced into our daily environments by engines started in earnest after the American Civil War. Evolving from crude motors barely capable of supporting the needs of a single person into nuclear turbines with the capacity to deliver enormous power to a multitude of other engines whose operation, in turn, they fueled, today's engines, and the technology from which they spring, provide us with the means to bring significant, almost intimidating, artificial strength to nearly everyone.

This marks the end of an evolutionary cycle wherein artificial strength progressed from virtual nonexistence to ubiquity, created in that part of man's consciousness that defines need and propelled inexorably forward by his dazzling ingenuity.

Driven by technological refinements and quantum improvements, and pulled along by the dynamics of market demand, this entire creative/distributive cycle prefigured what was to happen to computer systems technology as a vehicle for the propagation/diffusion of artificial intelligence (as opposed to strength) that has occurred from 1950 to the present day. Both have hewn closely to the path of Hegelian dialectics over the course of their maturation. Granted, the time frames are different and engine technology is further along in its development than computer technology, but the parallel is too compelling to be dismissed as mere coincidence.

Artificial Intelligence Technology

The entire, overall mix of artificial strength delivery systems, encompassing everything from microstrength to macroutilities, is being echoed and matched by products emerging from artificial intelligence systems technology. In both instances, improvements in cable- (including wire) and broadcast-triggered syntheses of once-discrete system entities are enabling the creation of networks of devices that can communicate their collective powers to everyone, everywhere. Amplifiers both of strength and of intellect have massive potential to augment our natural stuff, increasing our capacity to cope with life on spaceship Earth.

It is well worth noting, however, that the rate at which our physical strength is being amplified has slowed in comparison to the rate of expansion of our intellect. That the cost of Motorola, Inc.'s 68000 chip is such that one could hardly buy a decent screwdriver for the same money dramatizes this point. But in the interplay of things, each of these evolutionary processes will lead to qualitative benefits in the other. And nowhere could the truth of this thesis be more manifest than in devices that wed magnified strength to artificial intelligence: that is, in robots.

Robots are surely a part of our future. From self-watering, earth-searching, internal season-controlling flowerpots (embodying the paradox of the green thumb that functions without recourse or allusion to the human hand) to self-propelled, map-reading lawn mowers, robots will now enter our lives in a benignant invasion to free us from onerous chores and otherwise insulate us from the threat of physical or intellectual burnout. They can certainly be expected to help us redirect our energies from the struggle merely to stay alive to the problem of devising ways in which to make our lives more nearly worth living.

Of course, the skeptics, cynics and Luddites among us are likely to resist the inevitability of robots, preferring to dwell upon the "traditional" themes of dehumanization and enslavement that have characterized every robot-ridden cautionary tale tossed off in the salad days of the science-fiction literary genre. But, just as the heretofore separate develop-

(Continued on Page 48)

HUMAN CONNECTION/Jack Stone‡

Cyberphobia: Not a Routine Systems Problem

One item missing from Harold and Elizabeth Guarnieri's article "The Psycho-Computer Syndrome" in *Computerworld Extra!*, for Nov. 17, 1982, is a large label with words printed in bold, black letters stamped on its front page that says: Warning!! Computer Industry Leaders Have Determined That Mishandling Cyberphobiac Users Is Injurious to An Organization's Health.

The caveat is necessary because the major theme of the article is that there is a "recognizable motivational pattern [Psycho-Computer Syndrome] with eight stages that always emerge during the training of a first-time user," mainly due to the fact that so many users, the authors allege, suffer from "cyberphobia" — fear of computers.

The authors suggest that during the course of computerization, information systems managers should look in user departments for symptoms of the syndrome, because then the information systems managers will be able to "guide [the] staff to accept and appreciate the system [they] know will generate departmental and companywide benefits."

This is the second article in a series, "DPers and the Psycho-Computer Syndrome," coauthored with Joanne Barker.

Do you believe that the typical DP manager, without intensive training and experience in industrial psychology, is capable of recognizing some of the stages during training — "ego-status disintegration," "hostility/challenge," the "search for equilibrium" or "ego-status integration"? More to the point, even with the training, do you believe that most DP managers can function effectively as practicing psychologists? I believe the answer to both questions is a resounding "No!"

Oversimplified Approach

It appears to me that the authors oversimplified both the statement of the problem and the approach to its solution. This is unfortunate because the topic is certainly important.

One mistake in the article is the suggestion that cyberphobia is just another routine systems problem that can be described in a straightforward way and addressed with a comprehensive training program.

Comments such as "Your staff will let you know when they are ready to accept computerization as their new office routine" and "The first sign of their readiness is a request to establish new routines ... Respond to their first signal by giving them a scheduling pad" are so superficial that the reader can, I believe, be misled, perhaps dangerously so.

Wrong Impression

Another problem with the article is that one can get from it the wrong impression that there are an awful lot of nuts running loose in user departments, and many of these people are entering our terminal training programs.

Balderdash! Even granting that a number of systems have their problems, many more are successful systems that have reached required stability and performance. This would not have been possible without a high level of user cooperation and acceptance of the technology, with or without quality user training.

Of course, there are many users with valid and natural concerns, fears and apprehensions about automation, all of which are understandable. But to attribute incapacitating phobias to a large segment of the user population is, I think, grossly inaccurate and quite unfair.

Absurd Conclusion

The same kind of logic applied to the computer center leads to a similar conclusion. DPers are not generally known as talk-show personalities, but rather as people who focus a great deal more attention on computer interaction than on human interaction.

But it is absurd to dub the typical DPer an "anthropophobiac" — my neologism for one with a neurotic fear of people.

It is equally ridiculous to offer users eight diagnostics for checking the psychological states of DPers for the purpose of weaning them away from the machine microcosm into the user universe.

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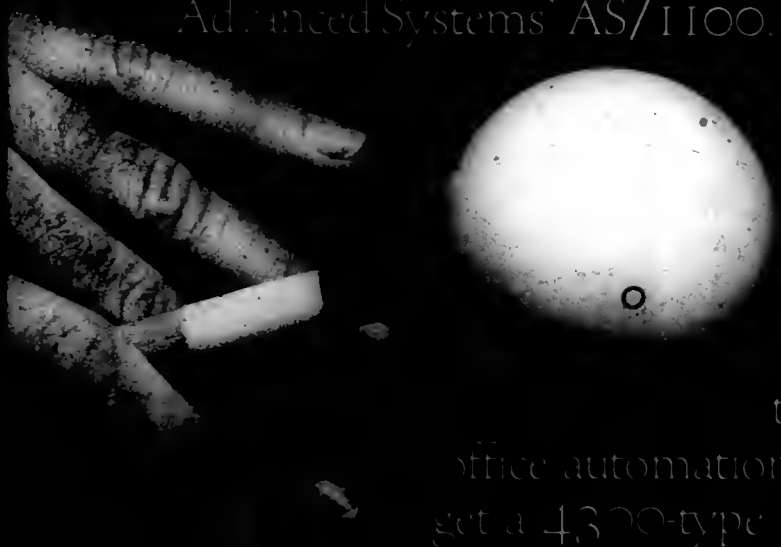

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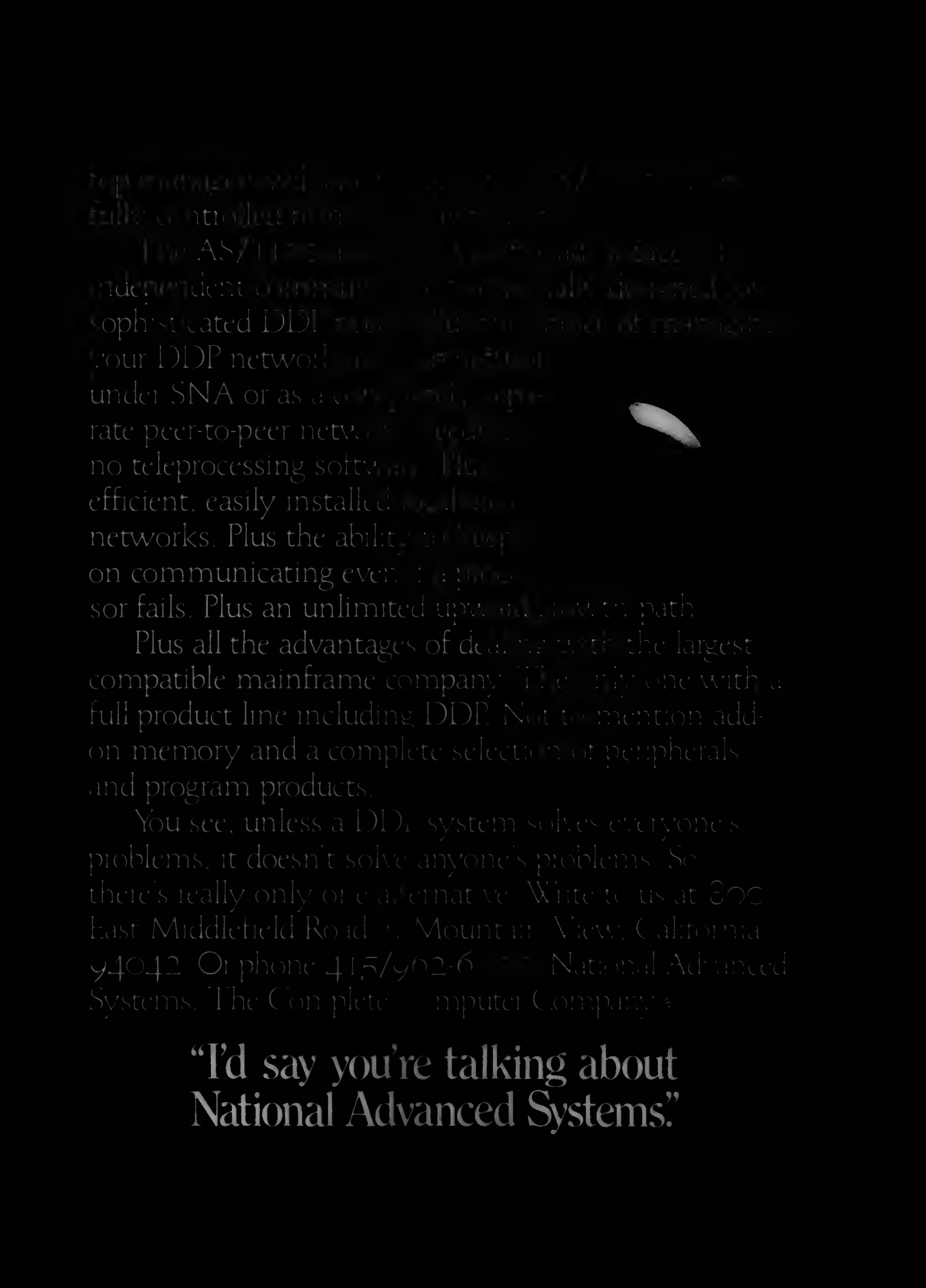

"I'd say you're talking about National Advanced Systems."

READER COMMENTARY / James J. Marcellino and John M. Conley‡

Negotiate Contract Clauses at the Beginning

Trial lawyers are often heard saying that there are two things you cannot change in a case — the judge or the facts. That is basically true. Although on occasion you can change the judge, the judge usually is assigned to the case either at random or as a result of sitting in a particular court. When it comes to the facts, all the trial lawyer can do is present what happened in the best possible light for his client, using every available means within the law and the professional code of ethics.

In the vast majority of computer-related cases, the contract itself is the significant "fact" because the contract determines the standard by which the parties' performance will be measured and in large part, determines the consequences of any breach.

Unfortunately, parties to computer-related contracts frequently fail to consider contract provisions that may be important if the contractual relationship runs into trouble. When the contractual relationship founders, a trial lawyer must step in to counsel his client on how to proceed. However, at that point, the die may be cast and the options limited. What a trial lawyer prefers is that the parties to a contract negotiate at the time of the formation of the contract about what will happen if a default or breach occurs.

Sometimes Reluctant

The parties are sometimes reluctant to negotiate contract terms relating to what happens if all goes wrong. Although negotiations on those terms might prove difficult or embarrassing, breach or default provisions, or their absence, may have a significant impact on the outcome of the dispute or litigation. The parties might do well to remember that people successfully negotiate antenuptial agreements.

Specifically, what would a trial lawyer want parties to a computer-related contract to negotiate? While each contract provision should be carefully tailored to the circumstances of the parties' relationship, the following are widely used clauses:

• Integration clause. Integration clauses simply provide that the agreement is what it purports to be, namely, the entire agreement between or among the parties.

By reducing their promises and understandings to writing, the parties bring into play certain important rules of law. Particularly, they bring into play the principle that the interpretation of the contract should be confined to the written agreement because the writing was intended by the parties to represent the agreement. Providing there is no ambiguity, the contract then becomes the best and only evidence of the agreement between the parties. The integration clause also will have the effect of barring the introduction of oral evidence of representations and statements not contained in the writing.

• Safe harbor provision. Cases arise where one of the parties will argue in defense that a contract is unconscionable in light of all the material facts surrounding its execution and, thus, unenforceable. To rebut that argument, the contract might provide that, for example, the customer acknowledges that he has read the agreement in question, understands it, has had the opportunity to seek advice of counsel and agrees to be bound by its terms and conditions.

• Variation by contract of time for bringing action. As a general rule, a provision dealing with the time within which a party can bring legal action on the contract is valid and binding so long as the contract provision is not unreasonably short and there is no statutory law to the contrary. The courts have recognized that the plaintiff should be given sufficient opportunity to investigate the claim and prepare for the controversy. Accordingly, the permissible time period will vary depending on the circumstances and subject matter of the contract.

• Governing law and forum. Subject to certain limitations, the parties to a contract have the power to designate the law to be applied. Generally, where the parties have expressed a specific intent with respect to the governing law, courts will uphold the parties' choice as long as the contract is not contrary to public policy of the designated state and as long as that state has some substantial relation to the circumstances of the contract and its performance. It is less clear whether a contract stipulation by which the parties consent to the jurisdiction of a particular court is enforceable. However, the parties to a contract should consider what their preferences are and whether such a provision would be enforceable under the circumstances.

• Appointment of agent for ser-

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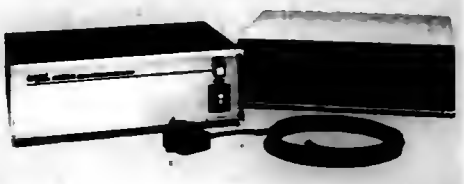

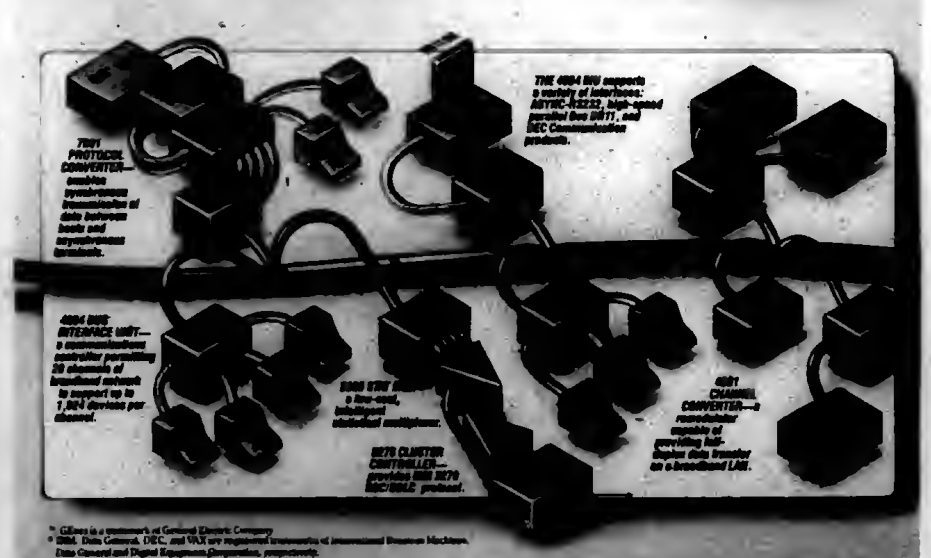

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READER COMMENTARY/Leslie Srager‡

Prepare Before You Negotiate a DP Contract

In negotiating contracts, the first question one considers is "Why negotiate?" We have all heard or uttered the usual cliches — "It's such a simple matter, why do we need a full contract?" and "I negotiated a contract once and all it did was stay in my desk drawer. We never looked at it." All of those are good excuses, bot bad reasons.

While it is true that by and large, your best recourse is a company or individual with principles and a good reputation and most contracts do simply remain in file drawers, you need a contract for those occasions when something goes wrong. For example, many people thought OPM Leasing Services, Inc. or Itel Corp were solrd companies, and look what happened to them.

What happens when the salesman you treasure or the vice-president you dealt with leaves, dies or retires? There is simply no substitute for a contract that clearly and specifically sets out the responsibilities, requirements, obligations and recourses of each party.

This is particularly true in the computer area, where much of the work done is in new, imaginative circumstances using complex equipment and little-understood, rapidly changing technology.

The process of negotiating is very interesting, when well thought-out, it is a microcosm of business itself. There are several day seminars and many books written solely on the art of negotiating. This article covers only the tip of the iceberg.

Preparation Is Key

I believe the most important element in negotiating any contract is preparation. The second most important element in negotiating a contract is preparation and the third most important element is preparation.

He who prevails in negotiation is the one who knows the facts best, has his ultimate goal well in mind and has thought through to the best of his ability the issues and possible compromises so that he may achieve his ultimate goal. In significant contracts, this involves a major amount of time, but it is well worth it.

No one person can do it all. There should be a leader of the negotiating team, but that leader must complement his weaknesses by properly choosing the team and by listening to the team.

An Example

For example, we had a major negotiation with Pacific Telephone & Telegraph Co. (PT&T). It was for a contract that was to extend over a minimum of three years, during which our company was to acquire a large computer for the use of PT&T, place it in our facility in Sunnyvale, Calif., run it under our operating system, place on it our software, have our people operate it and set up a private network to connect it to other offices of PT&T throughout California — obviously, a major undertaking.

The contract ran over 100 pages, took several months to negotiate and was basically still in effect seven years later. The team we had consisted of our top technical man, the salesman on the PT&T account and me That was a small team, but it was effective.

Each member of the team knew his role and each made contributions in areas in which the others were deficient. The salesman contributed history, identified particular PT&T needs, gave us background on the PT&T negotiators and played a large role in establishing a good rapport between the two teams. The technical man told us what we could and could not do technically and was in a position to establish what were for us reasonable tests with respect to installation, uptime, crashes, response time and the like. I evaluated the legal problems, did a lot of drafting and helped to evaluate the business problems. We had one principal spokesman. That was a good, well-rounded team.

While I've used a large contract as an illustration, the needs I noted apply to small contracts as well. Obviously, the hours spent in preparation should be substantially reduced and you do not need a full team.

In negotiations, the vendor has considerable advantages over the user. He knows his costs — the user does not. He knows precisely his limitations — the user does not. And most important, the vendor knows his weaknesses — the user does not.

User's Advantage

The user's big advantage is it is doing the paying, and all vendors have one thing in common — they want the sale. Users must keep in check those departments that simply must have a product or service. The user has to be sure it will get the needed product or service at a fair price and

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Prepare Before You Negotiate a DP Contract

(Continued from Page 45)

when and where it is wanted.

In my opinion, a key element in negotiations is to have an experienced, single-minded group doing the negotiating. Negotiating is a discipline just like law, accounting or writing a computer program: It requires experience, knowledge, endurance and preparation. If possible, the group should not include the people who have the crushing need for the product or service. A vendor looks for openings that it can exploit, and the best opening is finding the buyer's "hot button" and pushing it.

On the vendor's side, it is difficult if the salesman whose commission is at stake does the negotiating. The salesman can play a very useful and important role, but I do not think he should be one of the principal negotiators.

User Point of View

Let's take a plain-vanilla time-sharing contract from the user point of view. The vendor has a fancy printed contract that, it explains, thousands of others have signed. But why should you? Why should the vendor have a dollar limit on its liability? Why should the vendor be allowed to cut you off the system with no warning if for some reason you happen to be late in your payment? There are many other issues that could be of great significance to you.

Do not take anything for granted. For example, vendors say "Oh don't worry. We never cut customers off unless they are delinquent for 90 days." That's a perfect opening for you to say "Well, if you always do it, then why not put it in the agreement?" A typical user ploy is to hint at other companies willing to provide the service or product on better terms.

But a negotiation is not a war. You must live together later. State your positions, but always try to be (or at least appear to be) reasonable. State reasons for your positions, but do not be hostile. Use a phrase like "this is a breakpoint" sparingly. If you use it often, it loses its effect. Try to establish a rapport.

Be on guard against "salami" negotiating, that is, slicing an issue at a time because each isolated issue does not seem too important. Try to get the other side to state its problems and collect all of them, except perhaps the most fundamental. Then you know the universe with which you are dealing and you can see the horse trading you can do. You can also see how bad the problems are and whether they are raising issues you had not anticipated and for which you have no backup positions.

When you want to install a new system and the software you were promised by your friendly vendor does not appear and your boss asks you how you are going to recover some of the lost costs or profits, you are going to want to look at the contract and it is going to have to set out the obligations and liabilities of the vendor. If you don't have this, you're just swinging out there all alone.

Srager is a partner in the law firm of Rogers & Wells, Greenwich, Conn.

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LETTERS

'Work Made for Hire'

Roland K. Bowns' reader commentary "Who Owns Software Written Under Contract?" [CW, Feb. 7] suggests that having a commissioned author sign a provision that the software is a "work made for hire" will vest title in that software in the employer.

My understanding of the copyright law is that under Section 101, a "work made for hire" is either a work prepared by an employee within the scope of his employment or a work specially ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audio/visual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test or as an atlas, if the parties expressly agree in a written instrument signed by them that the work shall be considered a "work made for hire."

In the situation in which an employer requests commissioned software for general application not falling within one of the above categories specified in the statute, it is doubtful that a mere agreement will convert the software into a "work made for hire."

The Senate Committee Report states: "The basic problem is how to draw a statutory line between those works written on special order or commission that should be considered as 'works made for hire' and those that should not. The definition now provided by the bill represents a compromise which, in effect, spells out those specific categories of commissioned works that can be considered 'works made for hire' under certain circumstances." This seems to imply that the software cannot be considered "works made for hire" if it does not fall within one of the specific categories.

R.J. Baynham
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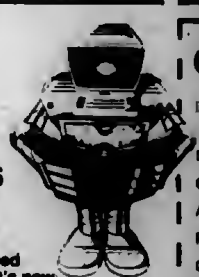

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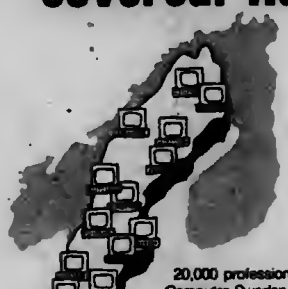

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A Robot for Every Baby, A Hologram for Every Dad

(Continued from Page 41)

ment of engines and computer systems technologies has palpably contributed to the general welfare, the ultimate synthesis of these two great currents in the form of human-subordinated robots can only do the same, perhaps more than twice as well!

Better Off

When each and every one of us has at least one robot, we'll all be a lot better off (if for no other reason than that our magnificent Samson-cum-Einstein contraptions will keep our cool for us when our natural circuitry has succumbed to sensory overload)!

And when there are finally enough of them to go around and robot-sharing has become a part of the dusty past, they will find their way, even as engines did and computers are now doing, into the hands of our children. And there resides, as it always has, the collective aspiration of our race.

It should not be too long now before each baby has at least one robot within a year of birth and everyone older, more than one. When this happens, it will end an Hegelian phase of the evolutionary cycle in robotics; future robotics will manifest increases in quality and number rather than in basic innovation.

With engines, computers and robots as integral to our perceived "natural" milieu as water and air, each of us shall have been translated into a human component in a flexible, nonthreatening network of organic and inorganic material expression.

I suppose there will always be someone to argue that we would be better off, and somehow more properly human, without this interdependency. It could, in my view, be as sensibly asserted that we would be better off enduring the surgeon's knife without anesthesia.

Suppose we had all this technology, and things were really improving for us: What would be the next technological breakthrough to rank in positive impact upon our lives with the computer? I believe the answer to that question is holography.

The key to holography's importance to humanity and its quest for peace, and that which elevates it beyond the plane described by "mere" computer applications, is in its potential for erasing invidious distinctions between the actual and the apparent.

If this seems frightening at first, consider its ramifications for such dangerous and crippling illusions as unbridled materialism. Does not holography contain within it the (superficially) surprising promise of offering mankind a boost, via technology, out of the physical, and from there into — where else — the spiritual? I think so.

Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

Negotiating a DP Contract

(Continued from Page 44)

vice of process. To enhance the prospects that a party may be sued in the chosen jurisdiction, the contract might provide that a corporation or individual within the chosen jurisdiction act as its agent for service of process.

As an alternative, the parties might designate a public official as the agent for the service of process either as the primary agent or if the original named agent resigns, dies or otherwise is unable to receive service.

• Waiver of jury trial. A contractual waiver of a jury trial, made independently of any pending litigation, may be enforceable. In many jurisdictions, a party can delay the trial of a case by claiming a jury trial because the courts are backlogged with criminal and civil cases requiring a jury trial.

It is generally quicker to proceed to a trial before a judge without a jury. In addition, in computer-related litigation, the judge may have a better understanding of the technical issues.

Moreover, when a case is tried without a jury, there is a written opinion in which the judge sets out his factual and legal conclusions.

• Rights and remedies of parties in the event of breach. Generally, a contract will not be construed to limit the remedies available to the parties unless an intention to do so is clearly expressed on the face of the contract. The parties may seek to spell out their remedial rights in several ways.

They may provide, for example, for liquidated damages, that is, a specified amount or a formula for calculating such an amount in the event of a breach. A liquidated damages provision will generally foreclose all other forms of damages.

Alternatively, the parties may agree that the nature of the contract is such that monetary damages would be inadequate. For example, in drafting an employment contract for a uniquely skilled employee, the parties may acknowledge that monetary damages would be inadequate in the event that the employee went to work for a competitor or the employer.

In such a situation, the parties may stipulate, first, that monetary damages are inadequate and, second, that the injured party is, therefore, presumptively entitled to have a court issue an injunction against the breach. Such provisions will generally be enforced by the courts as long as the provisions are reasonable in light of the circumstances of the parties.

• Severability provisions. Obviously, if for unforeseen reasons, a provision of the contract is declared invalid and the parties want the remaining portions to remain in full force and effect, they should say so.

Marcellino and Conley are attorneys with Gaston Snow & Ely Bartlett in Boston.

Assists in Options Forecasting

Modeling Aid Helps Oil Firm's Planning

LAFAYETTE, La. — The ebility to better forecast the effects of various management options in both day-to-day operations and long-renge strategic planning was the goal of an oil and gas company headquartered here.

Since Celeron Corp. alreedy had in place an IBM 4341 that was used for a number of corporate functions, the firm's management begán searching for e software package that would fulfill its corporate planning criterie. These included relatively unrestricted data manipulation capebilities, use of a language that would not require massive programming efforts when the model was changed and ease of use for non-DP personnel.

After surveying the field, Celeron chose e product of Economic Sciences Corp. in Berkeley, Calif., called EMS, according to Ed LeBlanc of the firm's corporate planning department. The installetion was handled jointly by the DP staff of Celeron and vendor personnel. Actual development work in EMS was done by two Celeron modelers who support ell use of EMS in Celeron and subsidiaries, he explained. In addition, the vendor's consulting staff helped implement the initial general structuring of the system.

Celeron is the parent of five operating companies engeged in elmost every segment of the oil and gas industry, including netural gas transmission, oil and gas exploretion and production, natural gas processing, oil refining, natural gas distribution and petrochemicals. Each operating company serves as an independent profit center with its own areas of operations. As the parent, Celeron provides a number of general management services to each opereting company, especially financing.

LeBlanc said that Celeron and its operating companies face a widening range of issues which need to be addressed by a plenning system. Some of the examples suggested were: the effect on the company of alternative government economic poli-

(Continued on Page 52)

Report Writer Targets Analysts

BERKELEY, Celif. — Economic Sciences Corp. has released a report writer aimed at business analysts who need simple yet flexible financial reporting.

The facility is available within the firm's EMS corporate modeling and data base menagement system (DBMS). Income statement, balance sheet, cash flow, variance and ratio ere said to be simplified by the report writer.

The EMS modeling and DBMS system is currently available for installation under IBM's VM/CMS operating system and may be licensed on a short-term or permanent basis. Permanent licenses range in price from $95,000 to $150,000. The vendor is located at 2150 Shattuck Ave., Berkeley, Calif. 94704.

'Tasc' Generates User-Selected Code

WOODRIDGE, Ill. — GEN 4 Systems has announced en on-line screen code genereter for IBM and plug-compatible mainframes running under DOS or OS with CICS or Information Management System.

Called The Autometic Screen Coder (Tasc), the product is said to generate code with ettributes, data names and other features that a user selects. Data names can be up to 25 characters in length. The package also generates the Cobol copy book that is used in a program's terminal I/O erea.

Tasc allows the programmer to paint the entire desired screen directly on a terminal and generate either basic mapping support or message formet service code from that image, a spokesman said.

The purchase price is $795 or $150/year on a lease basis from Suite 38A-1700, 8280 Janes Ave., Woodridge, Ill. 60517.

VM Systems Get Backup Facility

ENGLEWOOD CLIFFS, N.J. — Syncsort, Inc. hes announced Syback, a backup, restore and copying facility for IBM VM systems.

At the same time, the company announced Release 1.6 of Syncsort, a sort/merge program for IBM DOS/VS(E) environments.

The company claimed Syback reduces elapsed time, CPU time and start I/O resources required for backup/recovery. The packsge can perform system backup operations automatically.

Syback can execute in a stand-alone mode as well as under VM/CP and VM/CMS. It can also be invoked as a utility under CMS or from CMS executive procedures or user programs. A three-year license costs $9,000.

The new release of Syncsort incorporates a Sortwriter feature and multiple output capabilities. With a single pass of the sort, Syncsort DOS can sort and manipulate data and present the output from the sort in user-specified form.

Sortwriting capabilities include headers, trailers, totaling and subtotaling at report, page and section levels. Pagination and dating, spacing and line skipping, character insertion and data format conversion are available, the spokesman said.

A three-year license costs $4,650.

Syncsort is located at 560 Sylvan Ave., Englewood Cliffs, N.J. 07632.

CPS Enhances 'Doktor' Generator

WAYZATA, Minn. — Commercial Progremming Services, Inc. has released an enhenced version of its Doktor Cobol program documentation generator.

Doktor provides seven reports and charts of Cobol programs, a spokesman said. They include an I/O chart, a detailed flowchart and a data cross-reference anelyzer.

The package costs $7,200 for OS installations and $6,500 for DOS and most other mainframes, the spokesman said.

Commercial Programming is located at 3701 Shoreline Drive, Wayzata, Minn. 55391.

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MPG Announces Pricing Structure for Ramis II

PRINCETON, N.J. — Mathematica Products Group, Inc. (MPG) has announced a four-tiered pricing structure for its Ramis II fourth-generation language and data base management system (DBMS) and 15 optional components.

The new pricing is based on potential value, which MPG equates with CPU power using performance ratings developed by International Data Corp.

Costs for the basic Ramis II system range from $40,000 for use on an IBM 4331 to $80,000 for use on an IBM 3081. Sixty-month payment plans ranging from $960/mo to $1,920/mo are available.

The pricing also applies to the 15 optional components that tailor Ramis II to specific capabilities. Typically configured systems geared toward decision support applications range from $62,000 on a 4331 to $124,000 on a 3081.

For a DBMS configuration, prices range from $73,000 on the 4331 to $146,000 on a 3081. A fully configured Ramis II system ranges from $86,000 to $172,000.

Individual options include the Formatted Screen Manager, ranging from $6,000 to $12,000; the Plot high-resolution graphics facility, $5,000 to $10,000; and Relate, which provides relational access to data in the form that already exists, $7,000 to $14,000, according to a vendor spokesman.

MPG can be reached through P.O. Box 2392, Princeton, N.J. 08540.

Review Service Announced

LOS ANGELES — The accounting firm of Coopers & Lybrand has announced an independent evaluation service for commercial software based on a method developed for internal use at the firm.

The process involves reviewing design and documentation, testing the functioning of the accounting and auditing procedures and controls and evaluating and reporting the results. The service also determines if financial packages are prepared in accordance with generally accepted accounting principles, a vendor spokesman said.

The resulting report identifies the package, directs potential users to the internal controls included in the package, describes what is and is not covered in the review and specifically identifies test limitations, a spokesman said. Pricing is based on a variety of factors, including the complexity of the package and the time required for analysis.

The service is administered from 1000 W. Sixth St., Los Angeles, Calif. 90017.

Cdos Provides Trading Info

NEW YORK — The Monchik-Weber Corp. has announced a real-time trading support service, the Commodities and Debt Options Service (Cdos).

Cdos reportedly consists of a series of on-line display screens that provide quote information, theoretical values and strategy analyses on nonequities options, such as those on futures contracts, financials and indexes. Currently, Cdos provides calculations on gold, sugar and T-bonds; pricing information on the new options, specifically the Standard & Poor and New York Stock Exchange Indexes; and data on the Value Line Index, according to a spokesman for the vendor.

The screen displays give calculations for all calendar months and include last price, net change, high/low, bid/ask, actual and estimating volume and open interest. Also included are spreading, hedging and arbitrage strategies, the vendor spokesman said.

Cdos is available on a time-sharing basis and can be accessed nationwide via the Tymnet, Inc. network. Monchik-Weber is located at 11 Broadway, New York, N.Y. 10004.

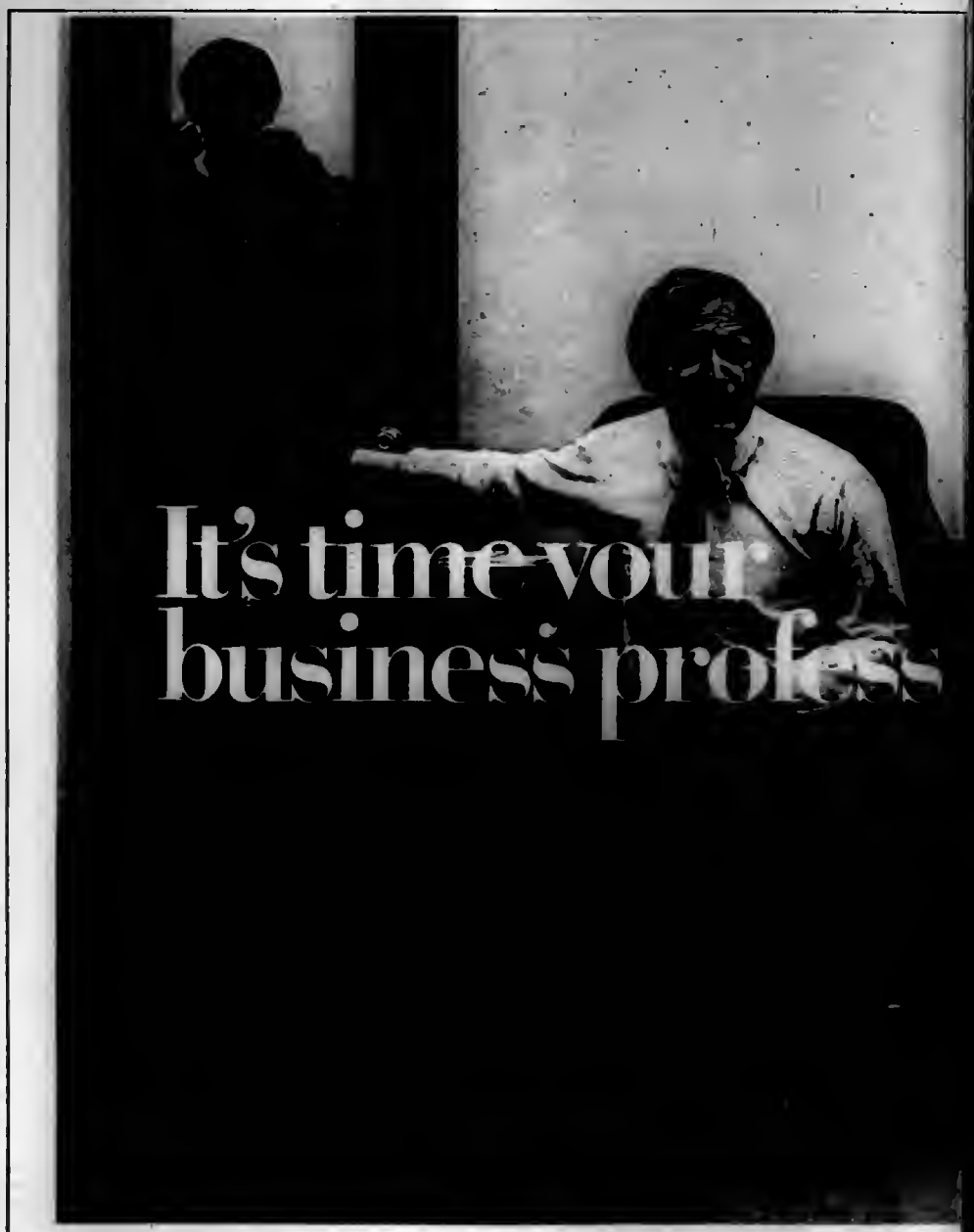
Support Added to Vserv for DOS

SANTA CLARA, Calif. — Software Assistance, Inc. has added support for fixed block architecture disks to its Vserv Volume Table of Contents (Vtoc) service utility for IBM DOS and DOS/VS(E) operating systems.

Vserv provides a disk mapping facility for identifying wasted or poorly used disk space and has Vtoc manipulation capabilities to enable the user to take direct action in solving allocation problems and altering file attributes, a spokesman said. The package requires no assignments prior to execution and can operate on multiple drives in a single execution.

The facility also shows all data areas and free spaces in extent order followed by summaries and statistics for free space, alternate tracks and data set usage. It recognizes system files and libraries and displays end-of-file addresses, blocking efficiency and track usage.

The purchase price is $600 from Software Assistance through P.O. Box 2101, Santa Clara, Calif. 95055.



Provides Summary Records

Release 2.8 of Fastdasd Unveiled

HERNDON, Va. — Software Corp. of America has announced Release 2.8 of Fastdasd, a direct-access storage device (Dasd) performance and reporting system with a history file that maintains a perpetual record of Dasd use and performance and provides documented summary records.

Customized reports and graphs can be produced using programs such as SAS Institute's SAS and Pansophic Systems, Inc.'s Easytrieve, the vendor noted.

A spokeswoman said new reporting features have been added to the data analyzer. They include interactive seek and generic data set name selection capabilities and a cross-volume reorganization report that recommends moving data sets to other volumes. New control cards and keywords have been added and a reference card is available which lists Fastdasd key words and provides tables on Dasd timing and capacity.

Fastdasd operates on IBM mainframes running OS and supports IBM Dasd and compatible devices. The product costs $5,500 for one CPU and $13,500 for a site license from 455 Carlisle Drive, Herndon, Va. 22070.

'Property Pro Series' Fits IBM

ATLANTA — Property management software designed for nonresidential real estate facilities and said to run on IBM's Datamaster has been introduced by the Management Control Systems Division of Informatics General Corp.

Property Pro Series reportedly provides property managers with accounting tools for financial reporting, tenant management, accounts payable and investment modeling.

The software is priced at $10,500 from the Management Control Systems Division through P.O. Box 723787, Atlanta, Ga. 30339.

If managers, decision-makers and technical users aren't knocking down your door, they are finding other ways to meet their needs: Business professionals want answers now.

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ionals got their own answers.

IBM

HP 3000 Gets Modeling System

PHILADELPHIA — Data-Tek Corp. has announced Proforma, a financial and business modeling system for users of the Hewlett-Packard Co. HP 3000 computer system.

Proforma includes "what if" and spreadsheet applications in areas like budgeting, venture risk analysis, fund management and scheduling.

A spokesman said Proforma uses English-language commands. It costs $20,000 and is available on time-sharing from Decisions Development, Inc. of New York, N.Y.

Data-Tek is located at Suite 400, 1211 Chestnut St., Philadelphia, Pa. 19107.

Global Offers OS JCL Release

DUXBURY, Mass. — Global Software, Inc. has announced Release 2.0 of its OS JCL Convertor for IBM mainframes running under OS.

Release 2.0 reportedly provides orderly automated population of a data dictionary with the information contained in a firm's OS JCL. Currently, the JCL Convertor supports Data Dictionaries managed by MSP, Inc.'s Datamanager.

The new release is said to add reports and programs to the list of objects that can be extracted from the JCL and symbolic parameters can be extracted and used as attributes of an OS procedure or job step. Also, the new release allows the convertor to process relationships, attributes and comments associated with nine different kinds of data processing assets. The appropriate information is formatted into source language suitable for maintenance of a Datamanager data dictionary.

Facilities are provided to enable ongoing maintenance of the data in the data dictionary as the JCL itself undergoes normal growth and change, the vendor said.

Perpetual licenses are $4,500 through May 31 and $5,500 thereafter and are available from Global Software, which can be reached through P.O. Box 2087, Duxbury, Mass. 02332.

'DOC-USS/34' Fits System/34

KING OF PRUSSIA, Pa. — An online documentation aid for IBM System/34 users said to provide a capsule view of the status of all files, programs and libraries, is available from Universal Systems Services, Inc.

DOC-USS/34 identifies indexed, sequential and direct files; indicates record length, number of records allocated/used/available; and for indexed files, indicates the key position and length.

In addition, all programs that use a file are listed beside the file, alerting the user to necessary program adjustment as the result of file changes, the vendor said.

The software costs $340 from the firm at Suite 215, 1150 First Ave., King of Prussia, Pa. 19406.

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Assists Forecasting Ability

Modeling Aid Benefits Oil Firm

(Continued from Page 49)

cies and the resulting interest rates, inflation and taxes, alternative proposals for natural gas decontrol and changes in Organization of Petroleum Exporting Countries crude oil pricing strategies. In addition, the system is needed to evaluate the effects of specific factors, such as changes in natural gas purchases by individual pipeline customers.

To meet its planning system requirements, the modeling takes place on two general levels. First, a monthly short-term budget model is used to examine the firm's and operating companies' well-being over the coming year. This is to support tactical decision making on a day-to-day basis. Secondly, an annual long-range planning model will be used to examine policy questions regarding where to take the firm in the future.

To construct the modeling system, Celeron is using the mathematical capabilities of EMS to simulate the economic and engineering relationships within each functional activity of each operating company and to factor in the data that determines revenues and costs within that function, LeBlanc explained. The functional models for each operating company are connected to a financial model for that company, and the outputs of the functional models become inputs into the company financial model. Each company's financial model produces income and cash flow statements and balance sheets which are, in turn, input into a corporate consolidation model that produces consolidated financial statements for Celeron under alternative economic, financial, regulatory and operational assumptions.

The operational model of the natural gas processing plants considers the ability of a plan to produce the possible volume and mixes of gas liquid products given such factors as the properties and volumes of the source gas, the engineering of the plant and the prices of products produced, LeBlanc explained. This model then determines — from these variables — the most profitable product volume and mix and the resulting income/expense associated with that operating level.

EMS also can be used to consider the impact on Celeron of acquiring a new firm into its corporate structure, he continued.

Using the EMS software, Celeron has developed the general structure of its strategic planning system. The modeling of all subsidiary companies is underway, incorporating as many of the functional analysis modules as possible and marking the place for those to be incorporated later. "Some people think we're done," LeBlanc said, adding that the current accomplishments have indicated future possibilities for the firm.

"Hyatt was a pioneer of local area networks. When Datapoint introduced the first one, we ordered."

—Bob Regan
V.P. Management Information Systems
Hyatt Hotels Corporation

"Local area networks are the hot topic in data processing these days. But they're nothing new to us," says Hyatt's Bob Regan. "Ours have been up and running for five years."

When Datapoint introduced the first local area network, the ARC® system, in 1977, Hyatt was among the first to install it. Today there are approximately 5,000 ARC local area networks in use, far more than any competing system.

"One reason the ARC network has been so effective for Hyatt is because it's easy to expand," says Regan. "Hyatt has had phenomenal growth, and the ARC has kept up. When more people needed the system to do more work, we simply added to the network."

The ARC local area network can be expanded virtually without limit by simply plugging in additional Datapoint processors, printers, storage disks, and terminals. Each new processor adds power to the network so new users get the same fast response the original users were getting. Companies can closely match the power of an ARC system to their needs, expanding in small, inexpensive increments instead of buying "more computer than they need" in order to have room for growth.

What's more, Datapoint systems can be expanded or upgraded without replacing software. "We run some programs on ARC networks that were originally written for our first Datapoint computer more than ten years ago," says Regan. "That means we didn't lose any of the money we invested in programming and training. And it made the growth steps easy on our people. The changeover to the ARC network was accomplished in only two days."

No matter how far an ARC system is expanded, all the users can have access to all the data except where security precautions are installed. So even though more and more people are using more and more computers, there's never a need to duplicate files.

"At present, Hyatt operates forty-five ARC systems," Regan says. "Others are in the planning stages right now. On the operations side we use them for accounting, reservations, and group sales. At Corporate we use them for accounting and for systems development. Obviously, we depend on them heavily. They're like the meters where we check our own financial performance. They simply have to work. And they do.

"Hyatt has stayed with the ARC system because it's been cost-effective. That's the bottom line. I can recommend a certain system to a hotel, but in the end, the system has to sell itself. And keep selling itself after it's installed. Our Datapoint ARC systems have done that."

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RESPONDING TO THE NEW MANUFACTURING SYSTEMS—

are you ready?

From the requirements for a product, through the design and on to the actual finished product and shipment — every step of the manufacturing process is now being monitored by a computer. And DP/MIS departments are being asked to step in and make this process possible. If you're struggling with this now, or see this kind of demand in your future, *Computerworld's* April 25th Special Report on Manufacturing Systems is a "must read."

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You'll get applications stories, tutorials, marketing information and original articles on everthing from manufacturing resources planning (MRP) to robotics and inventory and shop floor control.

You'll get a story from a lighting equipment manufacturer who uses a computing system to develop clean bills of materials, improve cash flow and other applications. You'll read about integrating CAD/CAM with technical publishing; you'll get a story about how one company runs milling off a computer to manufacture cataract lenses and lenses for subnormal vision.

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From an article on manufacturing software and how to evaluate it to a discussion of factory automation systems where combined U.S. exports of such systems reached a value of $322 million in 1981 — you'll get a detailed examination of the manufacturing systems marketplace that's designed to give you the whole picture.

DP/MIS Pros need to know.

If you're among the nearly 200,000 *Computerworld* readers employed in manufacturing firms — you'll need to be prepared to become involved in this vital new area of computing. As a DP/MIS professional, you're going to need the background and information this April 25th Special Report offers you on what's available to help your company take advantage of these incredible systems — if you're not already immersed in the process.

And if you sell manufacturing systems — you know how vital a part the DP/MIS professional plays in determining what products companies buy when they're looking at new manufacturing systems and software. Here's where you'll find your readers next April 25th — reading *Manufacturing Systems* in *Computerworld*. Your ad in this issue will insure them more complete information on the products in the field. Ad close for this Manufacturing Systems Special Report is April 8. Call your local salesperson at one of the offices listed below, or call Don Fagan, Vice President, Sales at (617) 879-0700.

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

BOSTON/Chris Lee, Ed Marecki, Joe Fitzhugh, Jim McClure, Kathy Doyle, Diane Sukey, *(617) 879-0700*
CHICAGO/Art Kossack, Newt Barrett, Chris Lee, *(312) 827-4433*
NEW YORK/Mike Masters, Doug Cheney, Ray Corbin, Joan Daly, Fred LoSapio, Gale M. Paterno, *(201) 967-1350*
SAN FRANCISCO/Bill Healey, Barry Millone, Theodora Franson, A.G. Germano, Eileen Dunn, *(415) 421-7330*
LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, *(714) 556-6480*

Training Program Aids Software Installation

RALEIGH, N.C. — Global Software, Inc. has introduced an approach to implementing software for the IBM 4300 series, 370, 30 series, System/38 and System/34 or compatible systems.

Through the Software Walkthrough (Swat) method, Global makes a preinstallation visit to prepare the prospect for a trip to Global's headquarters for a hands-on training program and implementation of the client's system.

Global provides all conversion programs necessary for the client. Upon completion of the one-week program at Global, the client takes its system, files and customer reports back to its own company for installation.

The Swat method costs $7,500 for the week of training. Financial software packages such as general ledger, accounts payable, purchase order and standard cost range in price from $25,000 to $100,000, depending on hardware and features. More information is available from Global, located at 1009 Spring Forest Road, Raleigh, N.C. 27609.

Financial Modeling System Debuts

WINSTON-SALEM, N.C. — Information Management, Inc. has announced A+, a financial modeling system for the IBM System/38.

A+ was designed for the executive, non-DP user and is equation-oriented, which means the user works with familiar terms like profit and sales, not rows, columns or numeric representations.

Features include availability of an unlimited number of data lines by 96 columns, system guidance through model definitions, the ability to customize reports and have more than one report format per model, graphs displaying one or two data lines for comparison, the ability to copy models for consolidation of "what if" calculations without destroying original data, automatic present value calculations and documentation with a self-study guide.

A+ is available for $4,000 with an optional 30-day test period allowance. The firm is located at Suite 305, NCNB Plaza, P.O. Box 1154, Winston-Salem, N.C. 27102.

IBM Users Get Datamacs Update

VALLEY FORGE, Pa. — Management and Computer Services, Inc. (Macs) has announced an enhancement to its Datamacs automatic test data generator, said to expand a programmer's ability to create test cases in an IBM or compatible maintenance environment.

The Datamacs Command Language (DCL) enhancement reportedly can match and/or merge files, update direct-access storage device or Vsam files in place; convert files; and print records selectively.

DCL can also create interrelated files from scratch or from existing live files. DCL costs $6,000 from the firm at Great Valley Corporate Center, Valley Forge, Pa. 19482.

Program Aids Fit Prime 50 Series

WALTHAM, Mass. — Henco Software, Inc. has announced the System Specialist, a set of programming aids for Prime Computer, Inc. 50 series systems. The set includes Info, the company's relational data management system and fourth-generation language; the Info-Flow system, which generates automatic documentation of Info applications; and Info-Call, an applications interface that allows users of conventional languages to link programs with Info.

Info is an applications development tool that incorporates screen-formatted entry, data update, editing, data manipulation and ad hoc query, retrieval and reporting. It can join up to 10 files simultaneously, a spokesman said.

Info-Flow documentation includes cross-references and narratives for entire applications of any element. Info-call can be used to add Info features for data entry, screen formatting, interactive query and retrieval, menu-driven systems prototyping, relational data management and reporting to programs written in standard programming languages.

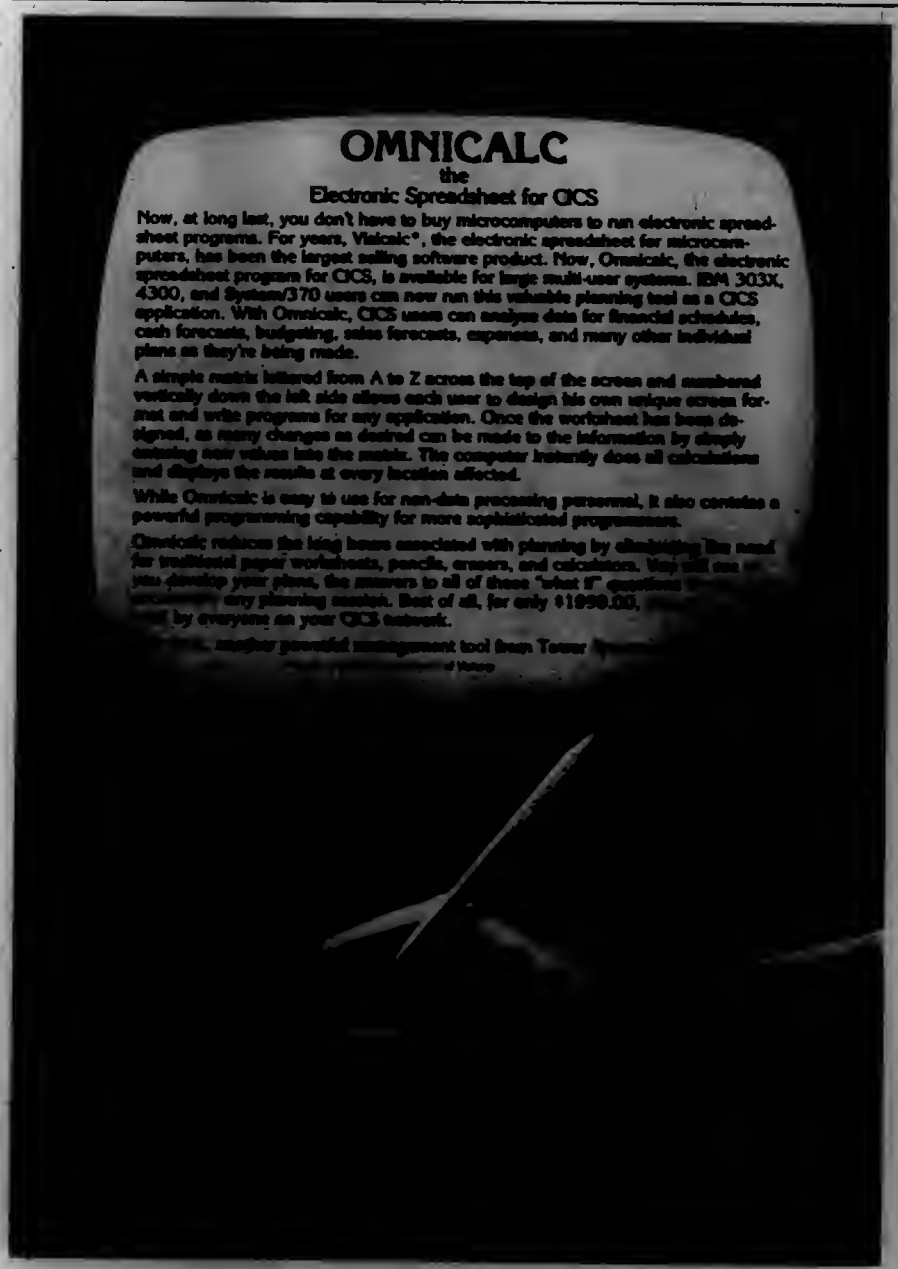
A one-time license costs $19,700 for the Prime 150 to 850 and $14,500 for the Prime 2250. Henco is located at 100 Fifth Ave., Waltham, Mass. 02154.

Administrative Tool Runs on DG Eclipse

NASHUA, N.H. — Computer Management Dynamics, Inc. has announced an integrated on-line administrative software package that runs on Data General Corp.'s Eclipse line of minicomputers.

The Integrated Student Information System reportedly handles admissions, registration, housing and alumni development; as well as a financial system with general ledger, receivables, payables, purchase orders, payroll and inventory control. It also features support systems that include word processor applications, report writing and graphics display, according to the vendor.

The software is priced at $100,000. The vendor is based at 5 Coliseum Ave., Nashua, N.H. 03063.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Now, at long last, you don't have to buy microcomputers to run electronic spreadsheet programs. For years, Visicalc®, the electronic spreadsheet for microcomputers, has been the largest selling software product. Now, Omnicalc, the electronic spreadsheet program for CICS, is available for large multi-user systems. IBM 303X, 4300, and System/370 users can now run this valuable planning tool as a CICS application. With Omnicalc, CICS users can analyze data for financial schedules, cash forecasts, budgeting, sales forecasts, expenses, and many other individual plans as they're being made.
A simple matrix lettered from A to Z across the top of the screen and numbered vertically down the left side allows each user to design his own unique screen format and write programs for any application. Once the worksheet has been designed, as many changes as desired can be made to the information by simply entering new values into the matrix. The computer instantly does all calculations and displays the results at every location affected.
While Omnicalc is easy to use for non-data processing personnel, it also contains a powerful programming capability for more sophisticated programmers.
Omnicalc reduces the long hours associated with planning by eliminating the need for traditional paper worksheets, pencils, erasers, and calculators. You still use your judgement to develop your plans, the answers to all of those "what if" questions and any planning models. Best of all, for only $1999.00,
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Test Plan Standards Portfolio Released for DP

VALLEY FORGE, Pa. — Management and Computer Services, Inc. has released a free portfolio of test plan standards that reportedly can be adapted by DP departments faced with the need to improve software staff productivity and/or the need to implement quality assurance programs.

The standards reflect a range of operating environments and are designed to address the structuring of a test environment and development of procedures to control the substantial portion of the life-cycle effort devoted to testing, according to a spokesman for the vendor.

The vendor said the standards were developed in conjunction with hundreds of clients over the last five years. The firms implementing the techniques reportedly are experiencing a 20% reduction in life-cycle development and up to an 80% reduction in ongoing maintenance costs, the spokesman maintained.

The use of the standards does not require Management and Computer Services' software products to gain improvements.

Actual test plan standards reflecting different levels of discipline from users are supplied in the portfolio, along with one testing standard from the vendor's internal manual, the spokesman said.

Included are a formal plan from a federal agency; an abbreviated, simplistic but absolute standard from a joint venture of major financial institutions; and a more liberal tutorial approach permitting considerable individual flexibility, according to the vendor spokesman.

The plans being made are said to complement and compare with those endorsed by organizations such as the Institute of Electronics and Electrical Engineers and the Data Processing Management Association, as well as DP auditors.

The package may be obtained, at no charge, by contacting Management and Computer Services at Great Valley Corporate Center, Valley Forge, Pa. 19482.

DEC Users Get Versions Of M/aps, KBM, APC, ENC

ELM GROVE, Wis. — McHugh, Freeman and Associates, Inc. has announced new versions of its Menu/Authorization Processor System (M/aps), the Keyboard Master (KBM), the Automatic Password Changer (APC) and the Data Encryption Package (ENC) for users of Digital Equipment Corp. computer systems.

M/aps, which provides secured menu access and argument passing, has been upgraded to provide a new security display feature said to allow the system user to view only those menu items the user can access. Passwords can be required of selected menu items as additional security, a vendor spokesman said.

KBM, which allows the system manager to monitor and interact with user sessions, now allows selective monitoring of designated user accounts or keyboard numbers under control of DEC's Login software, the spokesman maintained.

APC, which automatically changes user passwords using words provided in an encrypted 3,000-word dictionary, has been enhanced to allow a single user account or account project to be changed.

ENC, which encrypts source, data and task image files, has been upgraded to provide notification of aborted attempts to decrypt encrypted files, a spokesman said.

KBM and APC run under the RSTS operating system and sell for $500 and $350, respectively. M/aps and ENC run under RSTS, RSX and VM5 operating systems and sell for $995 and $1,250, respectively. The company is at 1135 Legion Drive, Elm Grove, Wis. 53122.

SMG T/S Service Uses Anvil-4000

WILLOUGHBY, Ohio — Figgie Systems Management Group, Inc. (SMG) has announced a time-sharing service that utilizes the Anvil-4000 computer-aided design/computer-aided manufacturing system developed by Manufacturing & Consulting Services, Inc. of Irvine, Calif.

Anvil-4000 is a two- and three-dimensional interactive graphics system that provides geometric modeling and analysis, mechanical drafting, file management, view and scale manipulation and numerical control tool path generation, a spokesman maintained.

The company will install graphics and communications equipment and provide a five-day introductory training course on Anvil, according to the vendor spokesman. Pricing is based on equipment installed, line charges and volume, the vendor spokesman said.

SMG is located at 4420 Sherwin Road, Willoughby, Ohio 44094.

The MICRO/MAINFRAME Connection....
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As a DP/MIS Manager you're being squeezed. Micros are pouring through the door like water . end-users are trying to tackle your application development backlog, and they're coming to you for advice on the technology they need to do it. At the same time, salespeople are telling you that all the pieces are available now, and that they have the ideal solution for your needs.

The pressure is on. But how do you afford the time to examine all the available products, cut through the marketing dazzle, and determine which products, if any, can help you get the job done, bring everything back together, and stay ahead of the game?

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Merlyn Software and Micro Decision Symposiums present a remarkable opportunity for today's DP/MIS Management to quickly find out which claims can be delivered, and which are Bull. Here are some comments from past attendees

". . . extremely informative. I would estimate that we saved some three months of research. The presentation was truly unbiased and a refreshing change."

Jeanette Pearman
Information Center Manager
Albuquerque National Bank

"We thought we had done our homework beforehand . .but we found so many new insights into the competing products that most of our preliminary legwork was invalidated. I can't imagine any attendee not getting more than his money's worth of decision support from the Software Decision Symposium."

William D. Masters
Michael Reese Hospital
and Medical Center

"Most helpful . . .anyone reaching a point where a decision is to be made should not do it before attending this symposium."

Henri Robitaille
Le Soleil Limitee

Microcomputers in a Mainframe World.
The end-users way out . . .or yours?

The Microcomputer, as we know it today, is only the beginning of a renaissance that already makes the Industrial Revolution look like a day at the beach, and will alter the way everyone looks at, deals with, and handles information in the future. The problem is it's come so quickly that there's been little time for understanding the technology, let alone formulating strategies for integration

So, where do you start? How do you quickly assemble and exploit an effective microcomputer strategy, and still cope with your day-to-day problems?

The Answer

Here's what the Micro Decision Symposium offers:

DAY 1

- What are the selection, configuration, and acquisition criteria you should be considering?
- Compatibility . .what's at issue?
- How do you effectively compare micro hardware and software?
- How do you integrate micros into the overall information systems strategy?
- What about security, data integrity, recovery, and auditability?

DAY 2

- What are the capabilities and limitations of the major hardware and software products?
- What are the real-world communications issues?
- How do you maintain and support micros?
- When do you use a Systems Integrator?
- How do you efficiently keep track of what's going on in the industry?

Schedule:

Seattle	April 20-21	Boston	May 17-18
San Francisco	April 27-28	New York City	May 24-25
Dallas	May 3-4	Baltimore	June 15-16
Chicago	May 10-11	Toronto	June 28-29

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Application generators, productivity tools, end-user query systems, database management systems, new methodologies They all claim to be just what you need. . . .instant answers to the backlog crisis.

But, realistically, how effective are the application generators? What do the so-called 'integrated' database management systems offer, and what are the risks of committing to such a solution? In the hands of the programming professional or the end-user, what are the strengths and weaknesses of the fourth generation languages?

The Answer

Here's what the Software Decision Symposium offers you:

DAY 1

- What is a Development Center?
- What are the different types of application generators?
- Do you need an integrated database management system?
- What are the management and implementation strategies?
- What products are available, and how do they compare?

DAY 2

- What is an Information Center?
- What types of jobs lend themselves to end-user development?
- What types of software should be available?
- What are the management and control issues?
- What products are available, and how do they compare?

Schedule:

New York City	May 3-4	Chicago	May 26-26
Pittsburgh	May 11-12	Toronto	June 8-9
Baltimore	May 18-19	San Jose	June 14-15

To Register:

To register, or get more information, call (800) 241-9970 or (404) 252-0516. Price per person is $595. If more than one attendee registers from the same company, in either symposium or any city, the second and subsequent registrants receive a 25% discount. The fee, which must be paid in advance, includes symposium coursebooks, all meeting materials, lunches, coffee breaks and a cocktail reception at the end of the first day.

If your schedule won't permit you to attend, expanded coursebooks sets, covering each symposium, are available for $495.

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In Europe, write to Henk van Lammeren, Hewlett-Packard Nederland B.V., Dept. 03175, P.O. Box 529, 1180 AM Amstelveen, The Netherlands.

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*U.S. list price including a system processor with 256 Kb memory, 4 terminal ports, the HP 2382 console/terminal and 28 Mb disc storage with cartridge tape backup.

Reporting Tool Introduced For IBM System/38 Users

MILL VALLEY, Calif. — Fusion Products International has announced Fusion 4/38, a reporting tool for the IBM System/38.

Fusion 4/38 is said to allow non-technical users to extract and produce reports from any data resident in their computer system. It can also perform mathematical calculations and custom document formatting and can be interfaced to a variety of output devices.

A data dictionary controls and provides access to any piece of information defined to the system, a spokesman said. The dictionary also stores a standard heading for the element, its decimal alignment and standard display format.

The interactive package formats and presents report data one page at a time at a specified display device. A preview option permits the requestor to verify the output format before executing the request.

Fusion 4/38 supports all standard IBM terminals and printers, as well as other output tools. Media independence modules can be expanded to support the network protocols that control information distribution such as local-area networks and personal computer clusters.

The package costs $5,000 in single-order quantities from 317 Miller Ave., Mill Valley, Calif. 94941.

For System/34

'Vakpak-Educator' Unveiled

SPARTANBURG, S.C. — Innovak International, Inc. has announced Version 3 of its Vakpak-Educator package for the IBM System/34. Vakpak is designed for use by secondary, post-secondary, vocational and technical schools.

The financial management system includes general ledger, personnel, payroll, accounts payable with purchase order encumbrance and fixed assets. The student administration system includes attendance, grading, grade reporting, scheduling, student records, registration, preregistration, accounts receivable and financial aid.

The package is written in RPG-II and requires a minimum of 64K bytes of memory and a 27M bytes of disk storage. A permanent license fee costs $33,600 from the vendor through Box 6308, Spartanburg, S.C. 29304.

Newsletter Out For Unix Users

MT. CARMEL, Conn. — Southwater Corp. will publish a quarterly newsletter for users and vendors of Bell Laboratories' Unix operating system and the C programming language.

Called "World Unix & C," the publication provides company profiles and tutorials as well as new developments, new product descriptions, interviews with product marketing personnel, user interviews, company profiles, book reviews, product reviews and person and project notes, a vendor spokesman said.

The newsletter costs $12 annually when paid by check or credit card and $16 when invoiced from 30 Mowry St., Box 5314, Mt. Carmel, Conn. 06518.

Prices Slashed For Ceads-Cadd

EL PASO, Texas.— Holguin and Associates, Inc. and Hewlett-Packard Co.'s Independent Software Supplier Program (HP-Plus) have announced a major price reduction and new pricing schedule for the Ceads-Cadd automated drafting package.

New prices for the complete package, including plotter, start at $64,000, a price reduction of $11,000, according to the vendor.

The software package is now available on the HP 1000 series of computer systems: Series F, A600, A700 and the new A900 system.

More information is available from Holguin & Associates, 5822 Cromo Drive, El Paso, Texas 79912.

Harris Enhances System/38 Aid

MILWAUKEE — Harris Data Service, Inc. has announced Release 1.2 of its Accounts Payable software for the IBM System/38.

Enhancements to the software include an inquiry into the open voucher file by vendor number, allowing the user to display a list of all vouchers for a particular vendor and a default expense account number in the vendor master file.

Also, vouchers can be entered and checks printed for temporary vendors, with name and address information for temporary vendors entered at the same time as the voucher. Expenses entered for future periods are now transferred to the general ledger as deferred expenses, a vendor spokesman said.

The software package carries a one-time purchase price of $4,500 and is available from the vendor at 11629 W. Dearbourn Ave., Milwaukee, Wis. 53226.

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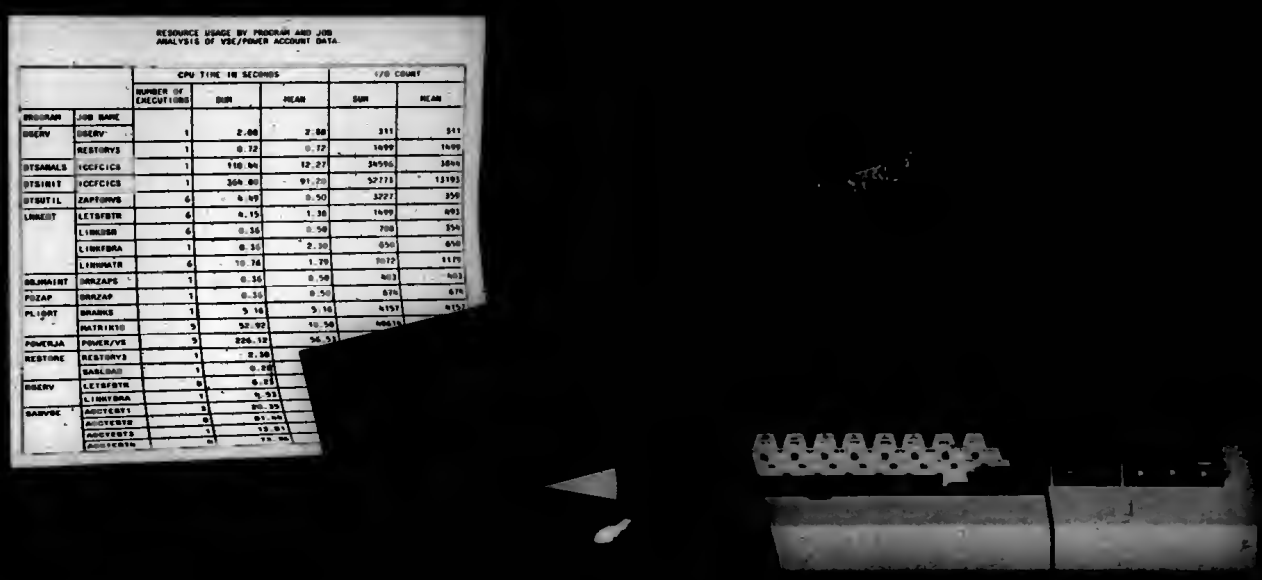

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Training Package Runs on IBM Micros, CPUs

AVON, Conn. — A self-study training package usable on an IBM Personal Computer or IBM mainframe (with an Interactive Instructional System) for developing leadership skills in computer center management personnel has been announced by Computer Systems Research, Inc. (CSR).

The Data Center Manager Series contains five courses aimed at the medium or large-scale data center. Course titles include "Data Center Organization Structures and Functional Responsibilities," "Personnel Resource Management" and "Data Center Planning & Objectives."

Also included are "Management of Change & Quality Performance" and "Budgeting, Rate Development and Chargeback Systems." Prices range from $1,500 to $2,500 per course module. The complete series costs $6,000.

CSR is located at Avon Park S., 40 Darling Drive, Avon, Conn. 06001.

System/34 Gets Distribution Management

METAIRIE, La. — D.A. Richards Corp. (Darcor) has announced an interactive, on-line Distribution and Service Management package for the IBM System/34.

The system accommodates inventories in excess of 40,000 items, a spokesman said. Pricing is possible on a per customer basis. The system tracks service jobs, provides status information and prints customer statements, invoices, purchase orders and picking/packing slips.

Reporting features provide status-of-item activity, service jobs, customer orders and back orders, accounts receivable and item and customer pricing. Inventory valuation is by the last-in, first-out method.

It costs $9,600 from Darcor at 3349 Ridgelake Drive, Metairie, La. 70002.

Directories For Software Released

NEW YORK — Elsevier Science Publishing Co., Inc. has released *The Software Catalog* for users and buyers, said to contain two directories for minicomputers and microcomputers, each available twice a year and describing more than 20,000 software products.

Features reportedly include software/system compatibility information; continuous updating via two editions annually and two intermediate updates; complete cross-referencing by computer (make and model), application, operating system, keywords, vendor, microprocessor and programming language; and optional support services.

The Software Catalog is said to be a successor to Imprint Software, Ltd.'s *The International Software Directory*. The data used in compiling the catalog was derived from the International Software Data Base operated by Imprint.

The 800-page microcomputer directory costs $69 for the spring edition and $15 for the update. The 560-page minicomputer directory is priced at $95 for the spring edition and $18 for the update.

Elsevier Science Publishing is located at 52 Vanderbilt Ave., New York, N.Y. 10017.

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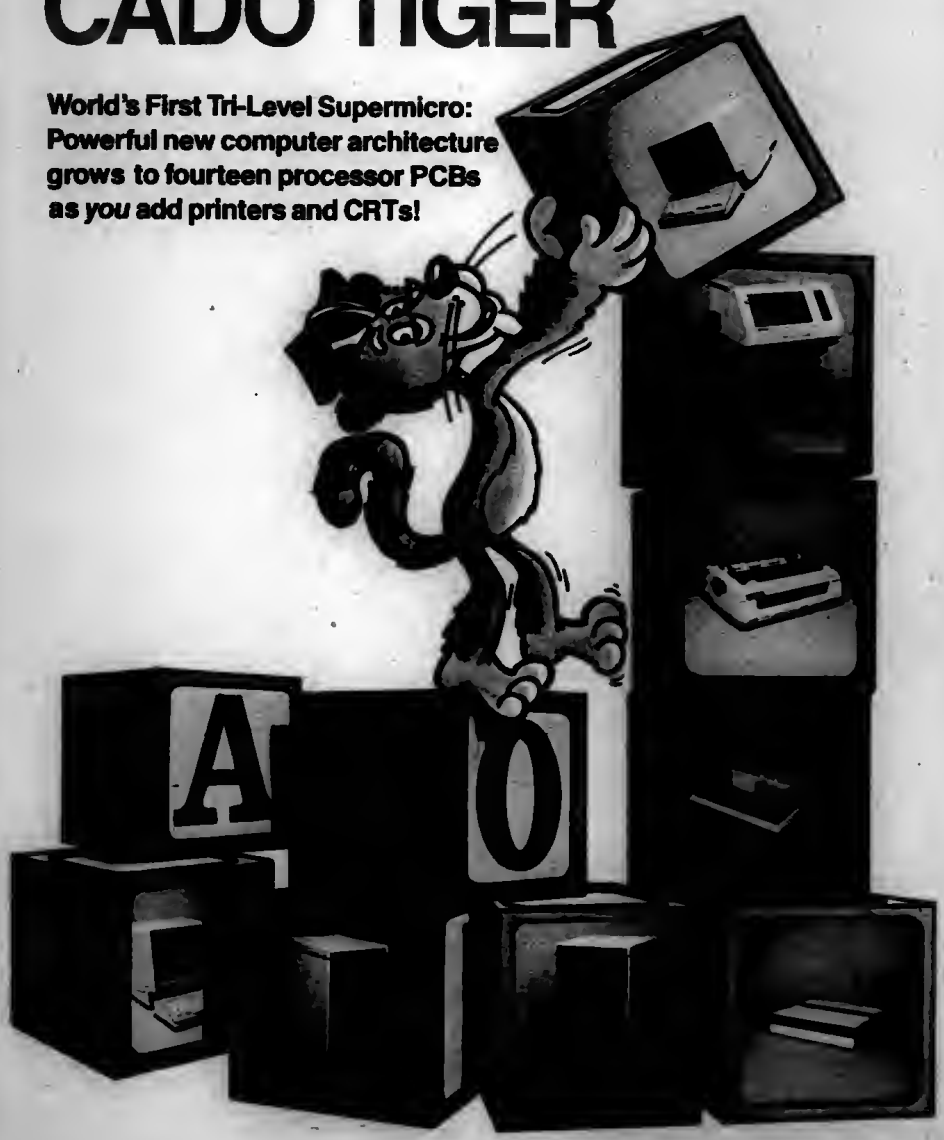

European Economic Data Bases Available in U.S.

VAN NUYS, Calif. — Cisinetwork Corp. has announced the availability in the U.S. of two European economic data bases — Comext and Cronos — that are produced and maintained by Eurostat, the Statistical Office of the European Communities.

Comext, a trade data base, reportedly covers imports and exports of over 8,000 products between the European Community nations and all of their trading partners. It includes three years of monthly trade history and uses the European Community's Nimexe nomenclature, which provides maximum detail. Cross-indexing with the United Nations Sitc classification system is also available.

Cronos, a source of European macroeconomic data, is said to have a special data base covering the developing countries and provides comparative statistics for the U.S. and Japan. The data base contains over 600,000 time series and is updated monthly by Eurostat.

Both data bases are available on-line via local telephone numbers on the worldwide Cisinetwork time-sharing system. More information is available from Cisinetwork, 16625 Saticoy St., Van Nuys, Calif. 91406.

General Ledger Tool Fits HP 3000

TULSA, Okla. — Hinderliter Management Systems has unveiled a general ledger package for Hewlett-Packard Co.'s HP 3000 family running under HP's MPE operating system. The package utilizes HP's Image data base management system and Hinderliter's Menu/3000 security menu system.

The Accounting Information Management System (AIM/3000) reportedly utilizes an advanced data base structuring technique to provide greater information access for all levels of the organization.

The on-line, interactive package includes comprehensive budgeting and allocation processing modules, permits user-defined, fully independent accounting periods, is parameter- and menu-driven and provides control of data security by restricting programs via the system menu, as well as restricting users by device and/or password.

AIM/3000 has a license fee of $9,000 and includes a report writer, security system, training, implementation assistance and a complete set of user documentation. A 30-day trial demonstration tape with documentation is available for a fee of $150, which can be credited toward the system purchase. More information is available from Hinderliter Management Systems through Box 35505, Tulsa, Okla. 74153.

Burroughs Users Get Utility Aids

JACKSONVILLE, Fla. — Jacksonville Software Services, Inc. has announced three utility programs for Burroughs Corp. large systems users.

Intersort reportedly enables the user to sort disk files by entering parameters at a terminal. It costs $695.

Interquery is said to allow the user to examine and modify data in any selected disk file. Data can be specified for display or hexidecimal formats. It costs $695.

Cryptolock is a file encryption system priced at $1,295 from the firm at Suite 234, 7555 Beach Blvd., Jacksonville, Fla. 32216.

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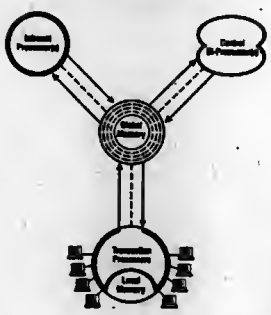

The CADO TIGER ATS™ uses multiple, tri-level, tightly coupled 16-bit processors to perform system functions and process user transactions. Because each task is shared by several processors, the TIGER can do more... faster.

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Long processing tasks are the job of the TIGER Intranet Processor. It frees the Transaction Processors to respond to inquiries and data input.

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Job Scheduler Fits System/38

CAPE GIRARDEAU, Mo. — An automatic job scheduler for the IBM System/38 has been developed by Data Trans-Formation, Inc.

The package reportedly allows users to schedule any user program, control language program or control language command to be run automatically at an assigned time and frequency.

Each job to be scheduled by the package is described by using a data entry screen, and users reportedly can specify scheduling for every day of the week and specific days of the week or month.

The software costs $235 from the firm through P.O. Box 1541, Cape Girardeau, Mo. 63701.

Distribution System Runs on DG

ARMONK, N.Y. — Exact Systems and Programming Corp. has announced a package for distributors, authorized representatives, retail stores and sales organizations. The package runs on Data General Corp. computers under the AOS, AOS/VS and Rdos operating systems.

The system is composed of seven basic modules, a spokesman said. The order entry module processes orders and performs validations, price lookups, customer profiles and order filling requirements.

The inventory modules process inventory stored at and shipped from any location. The invoicing module provides invoices for goods as they are shipped.

The sales analysis module presents gross and net of returns figures of merchandise categories, the company claimed.

The returns subsystem provides input to the inventory system to affect stock levels, adjusting of early warning and/or short supply tracking routines.

All accounting is performed by Accountbase, an integrated system that includes accounts receivable, accounts payable and general ledger. The production orders module is a means to order, control the order and track the receipt of raw materials.

The price for the distribution system begins at $25,000 for a full system, the spokesman said from One Labriola Court, Armonk, N.Y. 10504.

Payroll Software Announced for HP 250

FOREST HILL, Md. — A payroll software package for the Hewlett-Packard Co. HP 250 has been introduced by Maryland Computer Services, Inc.

PR250 features user-defined tax tables, the ability to handle salaried and hourly employees, an unlimited number of deductions and produces management reports.

The software also reportedly can change passwords, handle two different types of overtime rates and can print to a spool file. The package costs $1,500 for the first copy, $1,000 for every copy thereafter or an unlimited license for $10,000. A demonstration disk costs $150. Software Subscription Service is available for $25/mo for the first copy and $10/mo for every copy thereafter.

The firm is located at 2010 Rock Spring Road, Forest Hill, Md. 21050.

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Hospital Series Fits System/38

SAN DIEGO — Integrated Systems Management, Inc. has announced the Integrated Hospital Management System, a series of software modules for IBM's System/38.

Modules include patient registration, patient billing, accounts receivable, inventory control/purchasing, accounts payable, general ledger and unit dose pharmacy, the vendor spokesman said.

The combined price of all the modules is $115,000.

Modules can be purchased separately, the vendor said from Suite 344, 2515 Camino Del Rio S., San Diego, Calif. 92108.

PVI Establishes Library to Serve 'DI-3000' Users

BOULDER, Colo. — Precision Visuals, Inc. (PVI) has established an application library for users of its DI-3000 and Grafmaker graphics software.

The firm will act as a clearinghouse for user-developed graphics applications, maintaining abstracts on all programs and distributing the library for a modest fee.

Access to the application library is open only to PVI customers who have an up-to-date maintenance agreement in force. Customers who submit one program to the library will receive all library programs for a nominal distribution fee.

Those without a program to submit can receive for $250 the PVI-developed library programs only. PVI is located at 6260 Lookout Road, Boulder, Colo. 80301.

On May 18th, *Computerworld* launches its first communications satellite . . .

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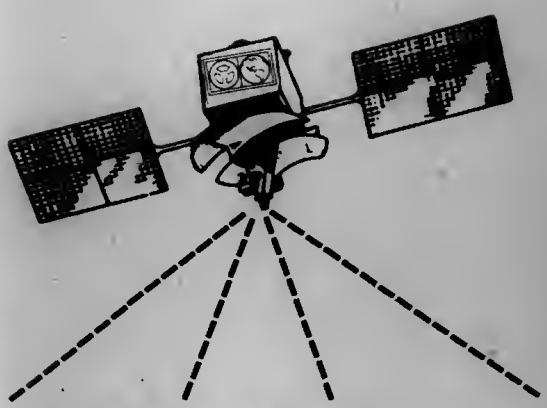
We are launching a new publication devoted to in-depth coverage of the broad spectrum of voice, image and data communications. *Computerworld On Communications* will examine communications issues, technology and applications from a systems perspective.

We recently did a study of *Computerworld* subscribers to determine their level of involvement and interest in communications. Of the 84% now using or planning to use communications equipment and services, 72% are personally involved in its selection and/or implementation. We found that these subscribers depend on *Computerworld* for communications information and prefer its coverage by more than 4 to 1 over the next publication in the field. This segment of our audience has a critical need for in-depth information on the constantly changing technology of communications.

As *Computerworld* expands its weekly news coverage of communications with interpretive information on products, equipment and services, *Computerworld On Communications* will complement that coverage with focused attention on the broader issues facing business communications users.

Computerworld On Communications will keep readers current on changing trends in the design, acquisition, operation, and optimization of corporate communications facilities. It will look at communications and networks from a systems perspective that relates technical capabilities with corporate goals.

In the two issues for 1983, *Computerworld On Communications* will apply the proven editorial resources of *Computerworld* to the area of communications networks. It will look at the implications of enhanced communications within the business organization together with the impact on established systems operations.



So, if you're among the majority of *Computerworld* subscribers who are personally involved in the selection and implementation of communications equipment and services for their organization, you'll find *Computerworld On Communications* a valuable addition to the *Computerworld* family of special publications.

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Remember to look for *Computerworld On Communications* on May 18th and again on September 28th (advertising deadlines April 8th and August 19th).

For advertising information on *Computerworld On Communications*, call Bill Dwyer, National Accounts Manager at (617) 879-0700 or your local *Computerworld* sales representative.

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Micro Notes

Microtek, Inc. has announced **Q-PAC**, a spreadsheet enhancement package for users of Apple Computer, Inc. Apple II and Apple IIE processors. The package is designed to operate with Visicorp's Visicalc. It consists of the Q-Disk 128K-byte disk emulation system, an 80-col. screen card and the firm's Visi-Expand-80, a software enhancement to Visicalc. The software costs $699, the vendor said from 9514 Chesapeake Drive, San Diego, Calif. 92123.

Pammac Corp. has announced a productivity management package for users of Digital Research, Inc.'s CP/M operating system. Called **PM 3000**, the package includes the ability to monitor the progress of specific projects, products, employees in training, machine downtime or virtually any measure of production flow. It costs $997, the vendor said from 1121 San Antonio Road, Palo Alto, Calif. 94303.

Strobe has announced two graphics packages for users of Digital Research, Inc.'s CP/M operating system and the firm's Strobe 100 graphics plotter. **Business Graphics I and II** is a combined package for the production of pie and bar charts, logarithmic and nonlinear scales. It costs $145. **Strobeview** is a menu-driven package for the production of flow charts and organizational charts as well as transparencies. The package costs $75, the vendor said from 897 5A Independence Ave., Mountain View, Calif. 94043.

Whitesmiths, Ltd. has announced **Pascal and C compilers** for use with the Digital Equipment Corp. Professional series of personal computers. Pascal and C functions may be intermixed in one program and all DEC Professional Library routines may be called from Pascal or C programs. Licenses start at $1,100, a spokesman said from 97 Lowell Road, Concord, Mass. 01742.

Statistical Graphics Corp. has announced **Statgraphics.PC**, an interactive data analysis and statistical graphics system for the IBM Personal Computer. The package requires the PC DOS operating system, at least 192K bytes of random-access memory, one disk drive, color/graphics adapter and corresponding monitor. A one-time license fee costs $225 with additional licenses priced at $40 from the firm through P.O. Box 1558, Princeton, N.J. 08540.

Chang Labs has introduced release 4.0 of **Microplan**, its high-end electronic spreadsheet for Digital Research, Inc. CP/M and Microsoft, Inc. MS-DOS operating systems. The new release includes a statistical package, monthly loan amortization and a feature that permits the user to see the impact of loan structure on cash flow. It costs $495 from Suite 200, 5300 Stevens Creek Blvd., San Jose, Calif. 95129.

Software Publishing Corp. has announced the availability of three of its information management software products on the Apple Computer, Inc. Apple II and Apple IIE computers. **PFS:File** is a computerized filing and summary system; **PFS:Report** sorts, calculates, formats and prints reports, and **PFS:Graph** produces bar, line or pie charts. Each package costs $125 from 1901 Landings Drive, Mountain View, Calif. 94043.

Fujitsu Microelectronics, Inc. will make Digital Research, Inc.'s **Concurrent CP/M** operating system available as an option on Fujitsu's line of Micro 16 personal business computers. The option costs $350, a spokeswoman said from Fujitsu's Professional Microsystems Division, Suite 103, 2840 San Tomas Expwy., Santa Clara, Calif. 95051.

Trax has developed software said to support file transfers between Apple Computer, Inc. Apple II and IBM Personal Computers. **Direct Connect** reportedly does not require any communications adapter or serial interface. The product costs $170 from Trax at 8948 W. 24th St., Los Angeles, Calif. 90045.

Remember the Seminar of 1776?

If Computers Existed 200 Years Ago, These Men Would Qualify as Seminar Leaders for Technology Transfer Institute

BENJAMIN FRANKLIN
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ALEXANDER HAMILTON
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THOMAS JEFFERSON
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- Structured VLSI Design — SEITZ/COHEN — Los Angeles — April 11-13
- SNA — MARKOV/BERNSTEIN/PIATKOWSKI — Washington, D.C. — April 18-20
- X.25 & Other Protocols — KARP/WEIR — Los Angeles — April 18-20; Washington, D.C. — June 8-10
- Videotext — VON MEISTER/CICIORA/LUTZ/AMDOM — New York — April 18-20
- Local Data Networks — ROBERTS/WEIR/WARMENHOVEN — Washington, D.C. — April 25-27
- IBM MVS I/O Configuration Management — BUZEN/ARTIS — Boston — April 25-27
- Relational Database — CODD/UPHAM — Los Angeles — April 25-27
- Do You Need MVS/XA & the IBM 308X Series? — LAMOND — San Francisco — May 9-11; Washington, D.C. — May 23-25
- Distributed Database Systems — BERNSTEIN — Boston — May 9-11
- American Bell's Net 1000 — HAMMER — San Francisco — June 13-15
- Database: A Manager's Guide — HOLLAND — New York — March 21-23; San Francisco — April 18-20
- Database: A Builder's Guide — HOLLAND/COLE — Washington, D.C. — May 9-12

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Packages Debut For System/34

NEENAH, Wis. — Advanced fnformation Management, Inc. has heralded three software packages for the IBM System/34.

The Library Documentation module costs $200. The Programmer's Utility Aid, said to expedite library and file management requirements, costs $200, according to a spokesman for the vendor.

The Data Base Conversion module reportedly will automate a conversion from a System/34 to a System/38. That module costs $1,000 from the firm at P.O. Box 39, Neenah, Wis. 54956.

Sorting Tool Bows for Users Of NCR 151s

CINCINNATI — Convex Resources has announced a sorting product that is said to allow users of NCR Corp. 151 or higher computers to cut Magnetic fnk Character Recording (Micr) document sorting in half.

Sortex examines the distribution of documents on the first pass through the Micr sorter, then makes better use of the available pockets in the following passes, a vendor spokesman said.

Sort savings depends on the number of available pockets, the spokesman said.

Sortex runs on the B1, B3 or VRX operating systems and will drive the 670, 671, 675, 6770 or 6780 Micr sorters, according to the vendor spokesman. The perpetual license price is $1,750 from the company's marketing agent, Software Clearing House, at 771 Neeb Road, Cincinnati, Ohio 45238.

DP Vendors Ink Pacts With PBX Firms

By Bruce Hoard
CW Staff

Recent agreements between major computer vendors and telecommunications manufacturers are moving the DP industry as a whole toward the long-sought goal of wide-scale, computer-independent compatibility. They also shed light on the battle of networking technologies.

The driving force in both cases is an explosive office automation marketplace with private branch exchange (PBX) and word processor segments that will together result in $6.4 billion in revenues by 1986, according to International Data Corp.

Computer giants like Digital Equipment Corp., Sperry Univac, Hewlett-Packard Co. and Data General Corp. are joining forces with such telecommunications heavyweights as Northern Telecom, Inc., Rolm Corp. and newcomer Intecom, Inc. to capture that lucrative market.

DEC has inked agreements with Rolm and Northern Telecom aimed at integrating its All-In-One family of office automation products with the Rolm CBX and Northern Telecom SL-1 voice-data PBXs. HP announced at the recent Office Automation Conference in Philadelphia that it is making its HP 3000 mainframe and CRT terminals compatible with the CBX, SL-1 and Intecom's IBX. The firm said it will be looking to conclude similar deals in the near future.

Analysis

The DG-Northern Telecom deal is especially significant because it links the Northern Telecom Displayphone — a desktop combination telephone-CRT terminal — with DG's CEO office automation products. As a result, CEO users will have access to the SL-1 and a popular terminal product previously incompatible with their systems.

Such reciprocity will provide users with the opportunity to evaluate competing products under comparable conditions while pressuring other computer and communications companies to test their wares in a newly competitive marketplace.

This kind of trend is a dark portent for companies like Datapoint Corp., which has been striving to succeed as a vertical supplier of PBX and office automation terminal equipment. Potential users may well ask themselves why they should get locked into a single vendor when they can capitalize on the fruits of a competitive market.

(Continued on Page 68)

Unit Compatible With BSC Lines

REDMOND, Wash. — Peripheral Technology, Inc. has introduced a terminal said to provide IBM users with an economical way to implement remote terminal support.

The Scat X terminal is plug-compatible with IBM's Binary Synchronous Communications lines. It operates as an IBM 3278 in either a stand-alone or a cluster environment and supports either copy or addressable printers, a spokesman for the vendor said. It has a 14-in. diagonal, nonglare screen and a detachable keyboard. The terminal interfaces RS-232 or RS-422 over dedicated, dial-up or multidrop communications lines, the spokesman said.

Scat X terminals are available for $1,295 and Peripheral Technology is located at 14784 N.E. 95th St., Redmond, Wash. 98052.

Link Workstations to CPUs Using SNA
Convergent Aids Introduced

SANTA CLARA, Calif. — Convergent Technologies, Inc. has introduced software said to allow its distributed intelligence desktop workstations to communicate with IBM mainframes using Systems Network Architecture (SNA).

CT-SNA, comprising three distinct products, reportedly allows up to 16 workstations to communicate with a mainframe using one communications line.

The SNA Network Gateway provides low-level communications services between the Convergent cluster and the mainframe. The SNA/IBM 3270 emulator supports high-level presentation services from the Convergent workstation in the cluster to the mainframe via the SNA Network Gateway.

The SNA/RJE, available later this year, will allow files to be transmitted between a Convergent cluster and a mainframe.

The SNA/IBM 3270 emulator, bundled with the SNA Network Gateway, costs $2,000 for a single copy from the vendor at 2500 Augustine Drive, Santa Clara, Calif. 95051.

Harris Enhances D1200 PBX

NOVATO, Calif. — Harris Corp. has introduced an enhancement for its D1200 private branch exchange (PBX) system said to permit user-programmable moves and changes as well as systems diagnostics, both remotely and on-site.

Program changes can be made using a personal computer that runs the Digital Research, Inc. operating system, CP/M. The system's enhanced design is said to permit the alteration of extension numbers, trunk and station assignments, toll restrictions and other parameters.

The D1200 family of PBXs accommodates up to 1,000 lines and trunks and offers such features as automatic route selection and station message detail recording.

Systems already in place can be retrofitted from $5,000 to $6,000, depending on the age of the system. More information is available from Harris, Digital Telephone Systems Division, Novata, Calif. 94948.

Laserlink Models Announced

EDISON, N.J. — General Optronics Corp. has introduced two wideband analog fiber-optic transmission systems said to feature bandwidths of over 250 MHz with distortion of less than .1% over the entire bandwidth.

Models Laserlink 8000 and Laserlink 13000 are said to offer fiber-optic analog distribution requiring low noise and low distortion. Laser performance is optimized by a peak limit circuit, a vendor spokesman said. Laserlink 8000 is available for $5,500 and Laserlink 13000 for $10,500.

The vendor also introduced a series of passive optical couplers using single-mode fibers with excess loss below 2 db. Models GO-SMC8 and GO-SMC13 are said to have several applications. The couplers have fiber leads of 1 meter in length and are housed in a rugged package for industrial use. Single-quantity price for each model is $1,250.

More information is available from General Optronics, 2 Olsen Ave., Edison, N.J. 08820.

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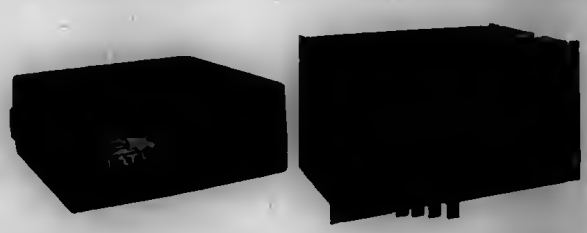

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Orange Co., Calif. (714) 563-0782 · Philadelphia (215) 532-7440 · Outside Florida (800) 237-1863

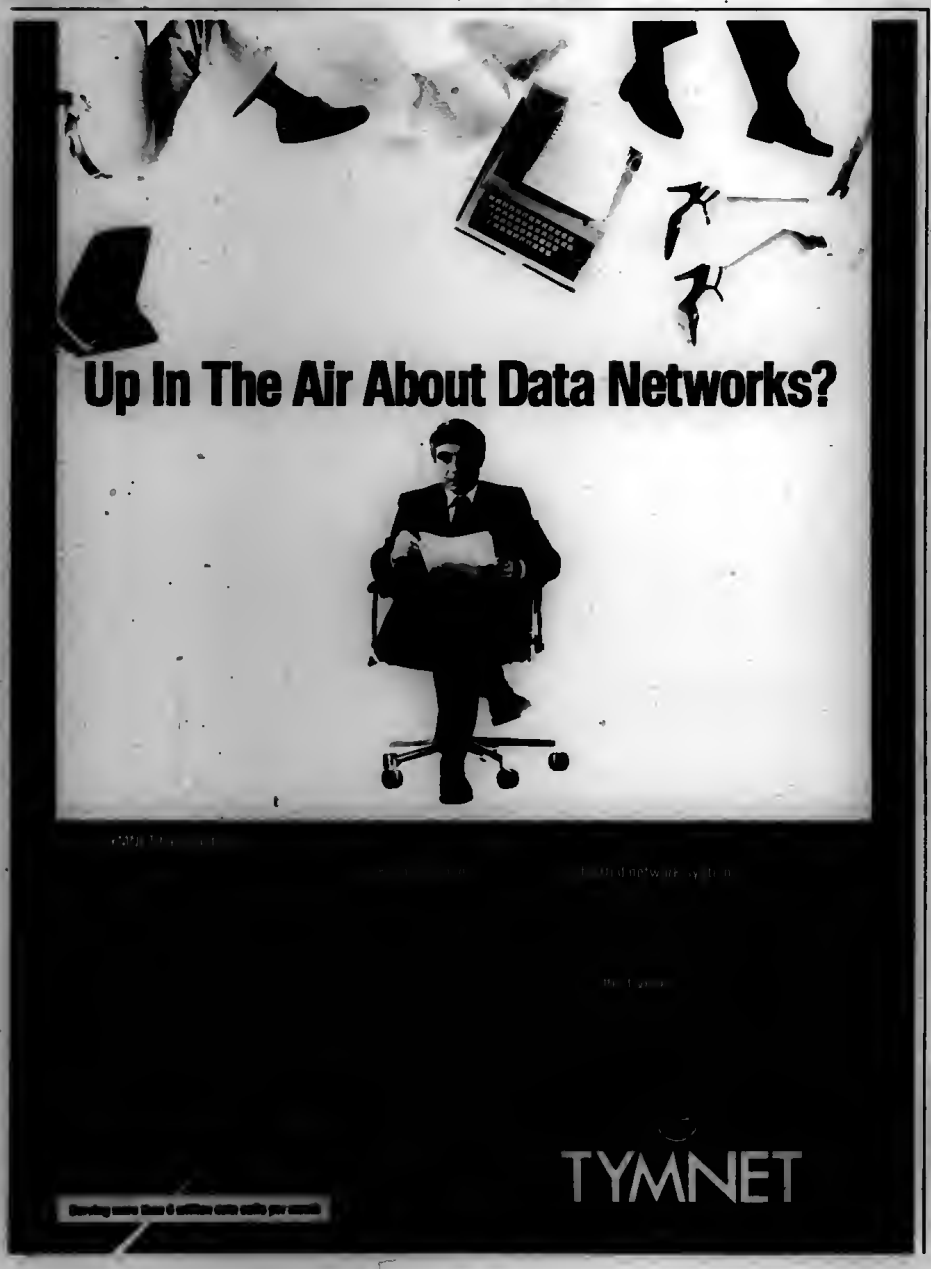
Tape System Boasts Error-Free Transmission

HOUSTON — Comspec, Inc. has unveiled a microprocessor-controlled tape system said to provide fast, error-free, tape-to-tape data transmission.

Tapetran reportedly transmits virtually any type of field-acquired data to a central processing site. It does not require private-line dedicated service for international communications and handles facsimile, print, plots, processed seismic, management reports and electronic mail.

The Tapetran facsimile interface feature is compatible for CCITT Group III digital facsimile units, the vendor said. A Tapeplot feature accepts standard plot tape and plots the data. Also, Tapetran systems are operational on UHF/VHF radio, microwave, Intelsat, Marisat/Inmarsat, Oil Sat and domestic and international telephone links.

The 8½-in., single-density system runs at 800 bit/in. and has a base price of $21,400. It is also available in 7-, 8- and 10½-in. single- and double-density versions. The Tapetran interface costs $2,000 and the Tapeplot feature costs $5,000. Comspec is located at Suite 275, 10,000 Old Katy Road, Houston, Texas 77055.



Four Procedures Target Tandem

BOULDER, Colo. — American Research Corp. has added four data analysis procedures and a file interface program to its version of the SPSS Data Analysis System software for use on computers manufactured by Tandem Computers, Inc.

The four procedures — Logit Model, Cox Model, Cox Time and Kaplan Meier — are said to enhance the data analyzer for applications in finance, banking, manufacturing and marketing, a vendor spokesman said. Applications include life cycles, product and process life expectancies, risk and hazard analysis and the calculation of survival rates, a vendor spokesman said.

The package is available for an initial license fee of $20,000 from American Research Corp., 4465 Grinnel Ave., Boulder, Colo. 80303.

Xyplex Offers Systems Tool

HARVARD, Mass. — Xyplex, Inc. has introduced a systems management package for its terminal switch and front-end system. The package includes an integrated front-end processing feature for the Digital Equipment Corp. PDP and VAX families of minicomputers that removes the terminal character processing from the host computer.

The Xyplex System provides terminal switching and port-selection capability within a building or campus over a local-area network. The package also allows the user to examine and control any of the components of the system, including the eight-line cluster controller and the host interface unit.

The package is available for a one-time license fee $1,600 to $2,400, depending on configuration. More information is available from Xyplex, Inc., Oak Hill Road, Harvard, Mass. 01451.

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Digital In-Line Scrambler Out

GREENSBURG, Pa. — Rotating Logic Systems has introduced a digital in-line scrambler designed for use in banks, financial institutions, hospitals, insurance offices or corporate facilities.

The LDS-250-S is sold in pairs, and each unit has a key code allowing for more than 20 million data scramble variations, a vendor spokesman said. It consists of an asynchronous serial descramble I/O channel and an asynchronous serial scramble I/O channel, a vendor spokesman said.

One set of data scramblers is available for $1,200 from Rotating Logic Systems, Highland and White St., Greensburg, Pa. 15601.

Split-Band Amplifier Bows

STATE COLLEGE, Pa. — C-Cor Electronics, Inc. has introduced a split-band amplifier designed for broadband local-area network data systems.

The LAN-100 series amplifiers provide for full-duplex data transmission over a 5-450 MHz bandwidth, the vendor spokesman said.

The LAN-100 single-quantity price is $700, available from C-Cor Electronics, 60 Decibel Road, State College, Pa 16801.

Why Are Vendors Inking Pacts With PBX Firms?

(Continued from Page 65)

This raises the specter of IBM. Even the giant of Armonk, N.Y., has surrendered to the technology transfer tide, as evidenced by its agreement with Mitel, Inc. to develop jointly PBX technology. That decision was announced after IBM's "Carnation" PBX, marketed in Europe, was declared a dud by top IBM management.

The industry leader also signed on with Texas Instruments, Inc. for work on very large-scale integration micro chips destined for local-area network use.

The posture of American Bell, Inc., the newly formed, fully owned and unregulated subsidiary of AT&T, also bears scrutiny. Finally freed of its corporate shackles, the company is expected to be a dynamic force in the marketplace. With its sprawling installed base of more than 40,000 Dimension PBXs and its recent introduction of the all-digital Dimension System 85, Baby Bell is a tempting target for terminal manufacturers and a fearsome competitor for other PBX vendors.

However, the company is showing no signs of opening up. To the contrary, it has introduced several proprietary Dimension-compatible terminal lines since its new-year inception.

And just where does all this PBX hoopla leave local-area networks such as Xerox Corp.'s Ethernet and its many derivatives? Most likely not in the position of being the dominant Fortune 500 automated office hub their manufacturers had hoped they would be. The recent acquisition of financially troubled Amdax Corp. by Ungermann-Bass, Inc. is telling testimony to that.

After a two-year battle fought largely in the pages of the trade press, it now appears that local nets will work with — rather than replace — PBXs. Their high-speed, high-bandwidth capacities make them ideal candidates for network gateways because of their ability to facilitate the heavy, bursty type of traffic involved in large data transfers.

The PBX has emerged in a position of strength largely because of its ability to utilize the sprawling installed base of twisted-pair wiring that is used for telephone communications nationwide. Although the coaxial cable used by local-area networks is relatively inexpensive, the process of rewiring an established building with it can be very costly.

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And what we learn on campus we share with LocalNet users in industry, finance, and government.

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1. *Datapro*: "User Ratings of Proprietary Software-COMPLETE" November 1982. 2. *Computerworld*: December 20, 1982.

From On-Screen Menu

Z-29 Terminal Unveiled

GLENVIEW, Ill. — Zenith Data Systems Corp. has introduced a CRT terminal designed for operation from an on-screen menu.

The Z-29 terminal allows for a user-defined parameter setting to meet desired specifications such as even/odd parity, bit/sec rates and handshaking. This is said to be accomplished on the keyboard rather than by the more common method of internal switches, a vendor spokesman said.

The terminal also features a detachable keyboard, a monochrome monitor and compatibility with Ansi protocol units and the Digital Equipment Corp. VT 52. On-screen editing includes character or line insertion and deletion, erase functions, tab sets and protected fields.

The Z-29 is available for $849 from Zenith Data Systems, 1000 Milwaukee Ave., Glenview, Ill. 60025.

EX100 System Enhanced With Info Processing, RS-232

SOMERVILLE, N.J. — Olympia USA, Inc. has announced two enhancements to its EX100 word processing system — an information processing capability and RS-232-compatibility.

The EX100 is a 64K-byte display-based word processing unit that employs an electronic office typewriter as keyboard and printer. The first enhancement is Multiplan, a financial spreadsheet program developed by Microsoft, Inc.

The RS-232 communications interface compatibility is said to expand the unit's versatility by making possible file exchanges from one EX100 to another, communications via phone lines or interfacing to other equipment.

EX100 costs $2,750 from the firm through Box 22, Somerville, N.J. 08876.

Receiver Program Introduced

INDIANAPOLIS — Dataflow Systems, Inc. has introduced a transmission receiver program said to read streams of data from a hand-held Telxon Corp. data entry terminal via communications lines and record the data on disk.

The Terminal Entry Liaison/3000 (TEL/3000) program for the Hewlett-Packard Co. HP 3000 computer is said to perform the following functions related to hand-held data entry terminal transmission: auto answer, batch or message file output to disk, control record, parity checking, error substituting, hang up, message logging and other features.

TEL/3000 is available for a one-time license fee of $3,500.

Dataflow Systems is located at 5302 E. Victory Drive, Indianapolis, Ind. 46203.

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TI Introduces CP502 Processor

AUSTIN, Texas — Texas Instruments, Inc. has introduced a communications processor said to support bit-oriented and character-oriented protocols at speeds up to 9,600 bit/sec.

The CP502 processor was designed for the TI Business Systems 600 and 800 computers and is equipped with both EIA and X.21 interfaces. The EIA interface provides full modem control and status capability for connection to leased-line or dial-up modems. The X.21 interface includes the necessary control and status capability for data circuit terminating equipment, a vendor spokesman said.

The processor is available for $800 from TI's Data Systems Group, P.O. Box 402430, H-644, Dallas, Texas, 75240.

Visual 55 Offers Function Keys, Editing Tools

TEWKSBURY, Mass. — Visual Technology, Inc. has announced a terminal featuring Visual 210 and Hazeltine Corp. 1510 emulation capability.

The Visual 55 is said to offer 12 user-programmable nonvolatile function keys that can be dynamically allocated, extended editing with an insert/delete character and selectable scrolling regions.

The terminal costs $895, and quantity discounts are available from the vendor at 540 Main St., Tewksbury, Mass. 01876.

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THE
PERSONAL
COMPUTING
LIBRARY
HOURS 9-5

IN DEPTH

and access to data. This may require a change in the systems department's role.

Break With Tradition

Even in firms with in-house time-sharing systems and information centers, managers and professionals are told that they as users will be responsible for not only defining their information and programming requirements, but also for writing whatever report, model or analysis they need with the existing mainframe software tools and languages. Not surprisingly, these people are looking to personal computers as a more acceptable alternative. Microcomputers offer such advantages as easy-to-use software packages and tools, consistent user response times and constant availability. The user may see additional benefits of ownership, security and privacy.

But uncontrolled and unsupported use of different, incompatible personal computers leads to obvious problems. First, users will have to develop their own fragmented and possibly inconsistent data bases. Second, incompatible personal computers and data files will hinder the formation of integrated office information systems.

In addition, users may duplicate one another's efforts and data as they do their own evaluations, select hardware and software, create their own programs and build their own data bases. On the other hand, new users will not be as knowledgeable as the early innovators and will require more assistance. If buying is not coordinated, the company may also miss opportunities to take advantage of quantity discount agreements with manufacturers.

The possibility that unskilled users may construct faulty business models or programs cannot be overlooked. These faulty models may gain credibility and acceptance because they are computer-generated, but they can lead to erroneous business decisions.

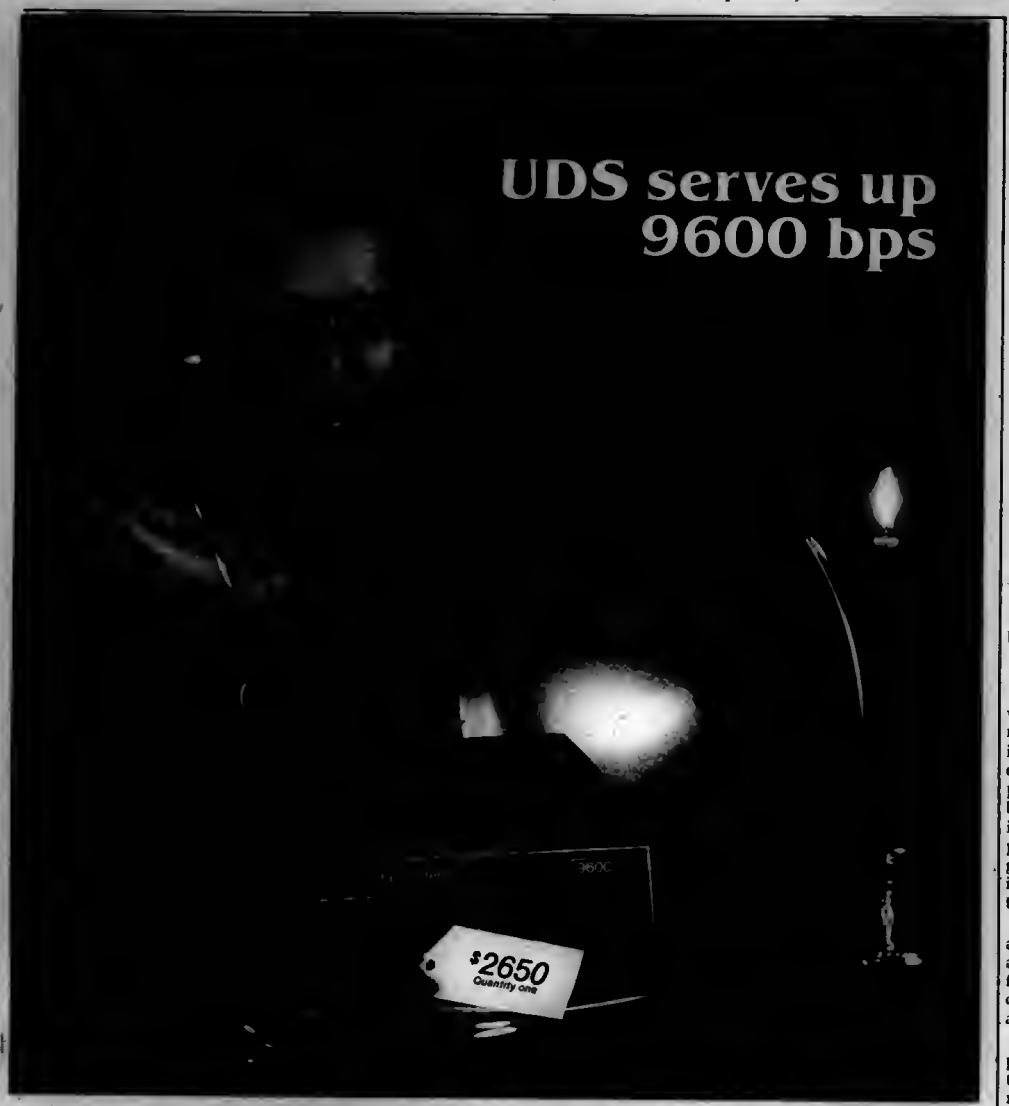
Extended Benefits

Despite these problems with personal computer use, most companies are not trying to stop their spread. Most companies see personal computers as a way to extend the benefit and power of their investment in central computer systems, software programs and corporate data to improve managerial effectiveness.

Information systems managers see personal computers as a way to reduce requests from users, which would otherwise be added to the applications backlog.

The use of personal computers serves another important, but less widely recognized role in an organization — that of teaching professionals to use computing tools and techniques as part of their job.

To realize the benefits of personal computers while reducing the potential risks, a company can take several steps. One of the first is to establish within the systems department a personal computing library to support the users. The library group has two functions. First, it pro-



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vides information and assistance in selecting, buying and using personal computer hardware and software.

The second function is to act as a data distribution center. By providing the personal computer user with valuable services, software tools and access to corporate data, the library can provide leadership in the use of personal computers, establish standards and take a long-term view of the company's business needs, as opposed to immediate, individual computing needs. The use of personal computers, therefore, will be controlled by the support the information systems group provides. The more support that is provided, the more control the group has.

In carrying out the first function of assisting in the selection and use of personal computers, the library can establish a personal computing learning center. The center can sponsor seminars and training sessions on such topics as available hardware and software and personal computer use. It can coordinate purchases to take advantage of quantity discount agreements with manufacturers and to limit the number of different computers requiring support.

The learning center should have personal computers available for demonstrations, training and lending. For users who are looking for advice on what software packages to use, the library may be able to recommend certain packages and allow the user to try the software on a demonstration computer.

It may also be possible for the group to download new or updated software to personal computer users. This would reduce a major problem in keeping a large number of users' software programs current without having to distribute a floppy disk to each user. For users who have a hard disk system, this would eliminate the extra procedure of manually loading the new floppy disk software onto the hard disk.

While existing personal computer software packages may be sufficient for most users, some may need custom programming. Some firms will not want their nonprogrammers trying to write programs for their personal computers, especially if the programs are used to advise customers or to prepare reports for regulatory agencies, or if the programs affect financial records. These firms may have the personal computer group write these programs on a central development system to take advantage of the programming aids available on a larger computer and also to maintain documentation and control over the programs.

Several companies have already taken this first step to support the personal computer user. One large bank in the Northeast established a learning center that was initially staffed with part-time volunteers from the information systems group. Within a few months, more than 200 people had received training from the center. This bank has several brands of personal computers available for use in the center and for temporary use outside.

A major insurance company has taken a further step with its learning center by making personal computers available for executives to take home for practice before they use them at the office.

For those companies that want the personal computer users to write their own programs, there is a need for protection from amateur software in critical areas. An additional role of the personal computer group may be to review, document and store important user-developed programs.

Internal auditors should periodically review personal computing models and programs that are used in sensitive functions. These reviews should determine whether additional measures are needed to control the quality of software. Managers who use the results of these models should be aware of the assumptions used in personal computing models, as well as the probability of errors in program logic, before making decisions based on the models.

Data Distribution Center

The personal computer library may also distribute data from the corporate data bases to the personal computer users. One of the first obstacles serious users may encounter is restrictions on the availability of

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CW 3/21/83

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The Xerox 2700 supports most systems that utilize Centronics 800, Dataproducts 2260 parallel interfaces and IBM bisynchronous interface protocol (2770 2780 3780).

IN DEPTH

data. Typically, the data a user or his department has supplied to the system is not available to him in a readily usable format. As a result, much of the data must be manually entered and the data may be inconsistent with other corporate data.

Shouldn't the financial analyst be able to access all his cost center report data on his own computer? This data could be as simple as the current month's cost center reports or as complex as the last 12 months' actual data, budget data for each month and last year's actual data by month. Shouldn't a cost center manager be able to extract required salary planning information from corporate files and apply the data to a salary planning package supplied by the corporation?

As noted by Robert Rosenberger ["The Information Center," Guide 51 Proceedings, Guide International Corp., November 1980], the file design and organization of operational data bases are highly structured for transaction updating, while end users need to query data files with little knowledge of even the logical structure of the query file.

One approach to this problem is to have the users define their requirements for periodic information. This information would be extracted on a regular basis from corporate and potentially public data bases and then reorganized on an interactive computer system to optimize for queries. Users with personal computers can have the data electronically distributed to them.

This procedure eliminates the time-consuming, error-prone manual entry of data. It also assures consistency of data, because the data being used by the user agrees with the corporate data. Consistency and accuracy, however, may not be that important to managers who would rather have rough estimates immediately than 100% accurate data one month later. Flash reports are examples of this trade-off between accuracy and timeliness: Business managers "flash" estimates of their financial performance when corporate management cannot wait for the official numbers. These flash reports are typically gathered and presented outside the normal DP cycle — that is, manually.

For decentralized organizations, the data distribution center can also be distributed to smaller scale, interactive computers at remote sites using common data dictionaries and network communications. By using distributed systems, a remote distribution center can avoid the need for a special computer room and support personnel, because these systems can operate unattended in an office environment.

Companies considering a data distribution center should investigate videotex technology as a way to organize and distribute efficiently large amounts of information. Videotex is more widely known in Europe for its use in external information and service networks that can be easily used by nontechnical users. The same advantages of extreme ease of use and high computer resource efficiency can also be achieved in an internal information network [Rembert Aranda, "The Home Office, Videotex and Personal Computers for Office Automation," *Telecommunications*, September 1981].

A more traditional DP approach to electronically distributing data to personal computers is to create a common data dictionary and file structure between the data distribution system that contains the extracted corporate data and the personal computer that will receive the data. Data can even be downloaded automatically at night if the personal computer has the ability to answer a dial-up line.

This important capability benefits the company by buffering the production systems from unplanned and uncontrolled demands that degrade performance. The benefits of this service to the users, though, may be a prime reason why users will agree to use the company-approved personal computer.

Both technologies provide an additional benefit by enabling the data distribution center to communicate to users any changes or revisions made to corporate data, thereby ensuring consistency. The need for multiple extract runs can be kept to a

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IN DEPTH

minimum by combining all the requests for data. Over time, as the extracted data files become larger and more inclusive, it may be possible to handle the ad hoc information needs of users from the data already extracted.

Another reason users may want to use company-approved personal computers is that they will want to communicate with their peers, secretaries and managers. A personal computer user should consider how his unit will fit into the company's overall networking strategy. It will be the library's challenge to evaluate computers on their ability to grow as the needs of the company expand beyond stand-alone personal computing.

Evaluating Personal Computers

Some of the attributes of a company-standard personal computer are related to the power of its operating system. The operating system must be capable of supporting the users' needs in the near term for such functions as graphics, networked communications and data management.

These functions require an operating system that can support large amounts of main memory and disk storage. The operating system must also be able to do more than one function at a time to be acceptable to professionals who do not want to wait for the computer to complete one function, such as printing a report, before they can perform another function such as reading or writing another report.

The operating system should have upward compatibility with a larger development system to facilitate central program development, maintenance and distribution. To facilitate data management and data compatibility between independently written programs, there should be a common, high-level file structure that can accommodate the various information needs of the users.

Above all, the operating system with all its power should not be visible to the nonprogramming user. The user should be able to access the system through standard or customized menus, rather than a system command language that he must learn. The objective should be to keep the user's barriers as low as possible.

The availability of third-party application software should also be considered in selecting a company personal computer. Third-party software may be either specifically written for a vendor's operating system or the vendor may provide a compatibility feature that allows software written for certain popular operating systems to be executed on the vendor's system.

Manager's Role

The role of the information systems manager seems to continue to change as each new wave of technology emerges. Yet in a larger sense, the information systems manager's role remains constant — that is, to manage the introduction of information processing technology in his organization.

In the '60s, he did it by controlling the mainframe; in the '70s, he did it by controlling the data. In the '80s, however, he will be judged by how well his company uses information technology. The information systems manager's focus shifted from hardware in the '60s, to data in the '70s, to the users in the '80s.

The personal computer is a major step in making information technology usable throughout an organization. The question, then, should not be how to control personal computers, but how to provide the leadership and service the users will require to take advantage of new technology. Establishing the library is an important first step.

About the Author

Donald B. Holden is responsible for software services industry marketing programs at Digital Equipment Corp. in Stow, Mass. He was previously involved with marketing programs related to DEC's personal computer products.

Before joining DEC, Holden was director of operations research for the Bank of New England, where he was responsible for an in-house decision support system.

He holds an MBA from the Wharton School at the University of Pennsylvania.

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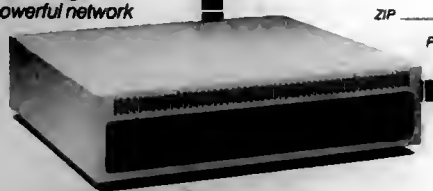

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STRATUS VS. TANDEM

(Or how the hardware fault tolerant solution supersedes the software based solution.)

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by Aaron Goldberg
of IDC which
appeared in *Computerworld's*
December 28, 1981 issue.

STRATUS/32 – SYSTEM HIGHLIGHTS

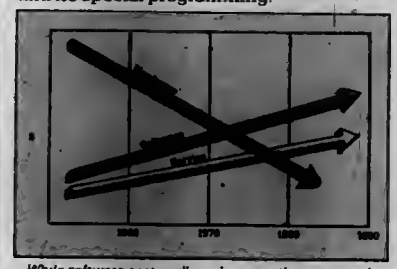
1. A simple hardware solution to fault tolerance that totally eliminates the need for extra application design and additional programming.
2. A design without performance penalties for fault tolerant operation – NO CHECKPOINTING!
3. A computer that pinpoints and isolates its failures, so repair is made quickly and inexpensively.
4. A system that can expand to 32 Fault Tolerant Processing Modules under a "single system image."

Now that the computer age is in full stride, 100% availability is fast changing from a luxury to a necessity. Downtime and its costs are unacceptable, especially when there is an alternative. Now that fault tolerant operation is becoming a universal requirement, there is demand for an improvement over the software approach used by Tandem. These computers must provide better performance, be easier to use, be easier to program and re-program, be less complicated and less expensive. We believe that the Stratus hardware based fault tolerant system answers these demands. Let us explain.

Why more hardware is better than more software.

The crux of the problem with software based systems is that they require complex, performance stealing software to provide fault tolerant operation. This software robs the system of precious resources because it uses processing cycles to pass status and checkpoint information back and forth between two computers. What's more, this passing of information can occur at four levels: operating system, user program, file management, and terminal control.

Stratus, meanwhile, has eliminated all this reliability software by having duplicate hardware components tightly coupled, dedicated to performing the same tasks at the same time. It's like having two computers in one, rather than two separate computers. Checking hardware logic detects errors with no performance loss and stops failing components instantly. The duplicate partner continues without interruption, unaffected by the failure. This is all transparent to the programmer and the user. With Stratus, there is no performance or data loss when there is a failure, no operator intervention, and no special programming.



While software costs will rise because they are people dependent, experts agree that hardware costs will continue to fall.

Why Stratus is easier to implement.

The Stratus designer and programmer might as well be dealing with a conventional computer; one of them, not two.

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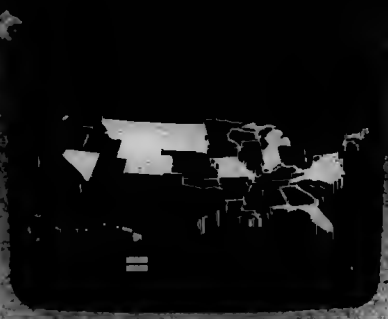

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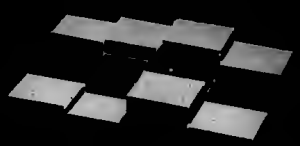

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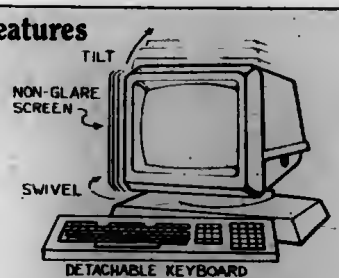

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DP Resource Planning

How To Get There From Here

By Robert E. Umbaugh

Resource planning for data processing is becoming increasingly complex with the growth of on-line systems, time-sharing, communicating office systems, data communications networks and hardware and software options. Long-range planning is never easy, and it is especially difficult for rapidly evolving technologies. Nevertheless, a comprehensive resource plan is vital for continuous DP service.

Traditional hardware resource planning using trend projections was generally a step function — that is, machine installation was planned and executed in single steps with lengthy intervening periods. Batch applications constituted most of the work load and increased as a function of the growth rate of the organization; the estimated impact of new applications was factored into the projections.

Because scheduling for use of these resources was completely managed by the DP department, there were relatively few surprises. Furthermore, because the installation of a major piece of hardware occurred rather infrequently, there was ample time for installation planning.

Although reliability was important in this batch environment, short interruptions were not nearly as disruptive as they are today, because the processing environment is much different. A number of studies report an average 40% compounded annual growth in CPU demand and an average 40% to 45% compounded annual growth in direct-access storage device (Dasd) requirements in major DP shops.

The general impact of such growth on cost, floor space, configuration management and power and cooling requirements is clear, but how this growth will specifically affect each one of these areas is

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IN DEPTH

not clear and requires a good deal of planning.

Card Playing

Resource planning requirements for hardware and network components can be collected and analyzed using the "Card" system: contingency, availability, reliability and demand.

Contingency. Contingency planning — preparing for the unexpected — is often the last consideration, yet it should actually be addressed during the early phases of resource planning so that decisions regarding contingency allotment can be used later as guidelines. Contingency can be addressed by establishing capacity corridors or reserve margin. Reserve margin is unapplied, but available resources that are assigned to satisfy unexpected demand. Such resources may be discussed in physical terms (for example, four Dasd set aside for contingency) or stated as a percentage or range of percentages (for example, CPU capacity will be projected load plus 18% ± 3%).

Availability and reliability. Availability, the ability of the system to satisfy the demands placed on it by the user, and reliability, the percentage of uptime of any individual component of a system (including software), should be addressed separately in a resource plan. A redundant configuration could conceivably offer 100% availability for a given period, whereas the reliability of an individual component — for example, a CPU — might only be 97%.

Demand. Demand systems (online, time-sharing, text retrieval and office systems), which permit users to place demands on resources at will, create a new set of problems. Dasd requirements are usually underestimated, networking is complex and costly and reliability and security are more important. The demand on the system as a whole and on its various components is difficult to project, and the scheduling of DP resources is no longer under the direct control of the DP manager.

Demand systems are usually most heavily used during the prime shift — the period when most office and line workers are at their jobs, between 7 a.m. and 5 p.m. The demand placed on the system during this period typically forms a spike — or peak — on a graph and is referred to as peak load. Identifying and projecting demand and controlling peak load are the primary tasks in DP resource management.

Load Duration Analysis

An initial analysis of the processing load imposed on the computer center provides a processing profile that shows the load characteristics for that particular center. The typical processing profile for a center with a number of on-line systems is a general graph of load and time, where load is calibrated in CPU hours, transactions or whatever measurement best fits the situation. To be more useful, however, both load and time must be broken down specifically.

One method of capacity planning divides the processing day into time zones and superimposes work-load categories on them (see Figure 1). Use of daily time zones for capacity planning will help the manager avoid the trap of using "average" daily load figures.

Viewing the work load in time zones also enables the manager to identify the source and size of peak loads.

Certain assumptions must be made when resource usage is planned. It is impractical to expect 100% use of any device's total capacity; therefore, reasonable ranges of performance and capacity corridors need to be determined for each group of devices in order to plan for resource additions. The capacity corridor is established by plotting optimal capacity and a reasonable estimate of practical capacity. For example, for a CPU scheduled to be available 24 hours a day for 22 working days a month, optimal capacity would be 100% of the total CPU hours, or 528 CPU hours. A more practical assumption, however, would estimate CPU operation at 85% of total capacity for the 22 working days, or 448 CPU hours. The capacity corridor for this CPU is then 448 to 528 CPU hours.

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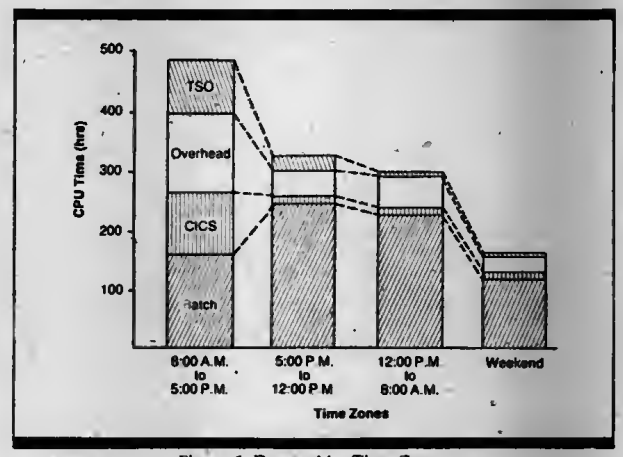

Figure 1. Demand by Time Zones

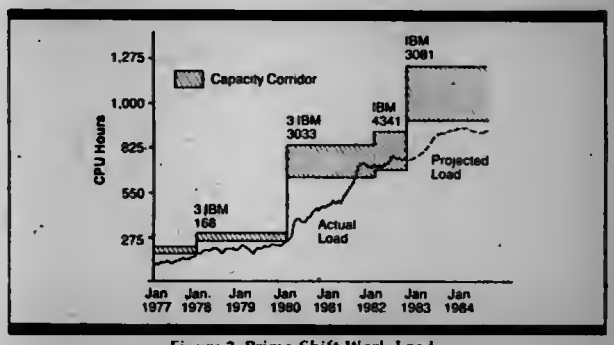

Figure 2. Prime-Shift Work Load

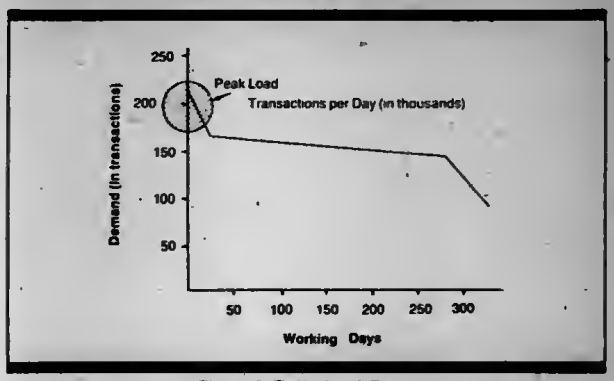

Figure 3. Daily Load Curve

Whenever projections of work load reach or enter the capacity corridor, the work load is processed "at risk," and some form of response is needed. The response must be decided on before it is actually necessary to take action — for example, projecting the need for a device must precede the real need for the device by the lead time necessary to obtain it. Figure 2 is an example of planning for prime-shift work load using capacity corridors. It is somewhat simplified, however, because actual load is shown as a total and does not reflect its components. As increments of capacity are added, the capacity corridor rises correspondingly.

In June 1981, the installation needed additional capacity. Some additional capacity was added in January 1982, but part of the work load continued to be processed at risk within the capacity corridor. As could have been predicted, operating within the corridor resulted in reduced service levels.

In summary, capacity corridors can help:

- Establish reasonable operating levels for various hardare components, especially CPUs.
- Forecast needed increments of processing power.
- Determine the point at which part of the work load will be at risk and service levels will deteriorate.
- Demonstrate to upper levels of management the need for a reserve margin.

Reserve Margin

In order to achieve a reasonable level of reliability, fall-back computing capacity — or reserve margin — is needed. Traditionally, the level of reserve margin was set by rule of thumb. As data processing applications increased and the work load grew more complex, however, reserve margin became essential and, for large installations, quite costly. The term reserve margin is probably better than "excess capacity," which incorrectly implies that the equipment is, for the most part, unused.

J.F. Chilcott, in a paper presented at the 1981 Japan, U.S., European Conference [1], outlined a method for matching supply with demand using reserve-margin computation. The initial step in establishing and justifying a reserve margin is the design of a load duration curve, which represents the demand expected on every working day in a year, arranged so the days with the highest demand fall to the left and those with the lowest fall to the right (see Figure 3).

It is also necessary to know the extent to which the peak hour within a day exceeds the average hourly traffic during the entire working day. The load will have a number of different components, depending on the installation, as illustrated in Figure 4.

In addition to different ratios of peak to average demand, the applications have different availability priorities. For a customer service system that supports direct interface with the customer (for example, an airline reservation system), availability is imperative, whereas it carries a much lower priority for an on-line financial planning system that is only

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used internally. The load duration curve can be arranged with these components ranked so that the least sensitive to reduction in availability falls at the upper edge of the curve and the most sensitive forms the base load, which must be available consistently.

The basic criterion for matching computing supply against the demand in the curve is that supply must be able to meet the predicted peak-hour demand if all computing equipment is working properly and is loaded to a degree that results in a reasonable level of response time (for example, 70% processor loading, resulting in a 3- to 5-second response time).

Such assumptions, of course, are not immutable and should be periodically reviewed by senior management. In addition, it may not be essential to plan to meet the entire projected peak-hour load every day of the year. A plan might be designed to serve the peak hour traffic on all except three days of the year, for example, as shown in Figure 5.

Figure 6 illustrates what happens if one of the processors fails. The example assumes that the total computing power is provided through a multiprocessor installation. For a single-processor shop, there are no fall-back options; the only decision concerns the acceptable length of time for the single processor to be inoperable before other action is taken.

When one processor fails, some loss in processing capacity occurs. The size of the loss depends on machine configuration; the most straightforward case is illustrated here, but the method can be adapted to any other configuration. The shaded area in the illustration represents the transactions that cannot be carried out when one processor fails. A comparison with Figure 4 shows that the essential applications can be served, but the less crucial applications are interrupted.

Although breakdown itself is unpredictable, the expected loss or deferral of transaction processing ability can be predicted for a particular configuration of computing power. It must be determined whether this is the "right" level of processing loss that should be planned for. One way of determining this is to redraw the plan to reflect a larger, more powerful set of computers. The expected loss of transactions is then recalculated compared with the expected loss using the smaller processors.

Comparing the difference in lost transactions with the increased cost of the more powerful equipment provides an estimate of the cost per transaction "rescued" by availability of the greater processing resource.

Treating fall-back or reserve-margin analysis in this way provides a number of benefits:

- It addresses contingency planning as an integral part of demand/supply planning, rather than as an expensive afterthought.
- It allows everyone involved in the investment decision aspect of resource planning — from the computing service user to the financial analyst — to view the processing power available under both normal and contingency conditions in the same way.
- It requires explicit assignment of priorities to the various components of the computing load.
- It determines the ranking of applications and the ultimate level of computing power by measuring the value placed by users on a lost transaction in each of the applications.

It is important to remember that this planning approach does not make policy: it merely provides a framework for policy decisions. Senior management must define the policy that guides resource planning efforts.

Peak Load Management

In addition to assessing reserve-margin requirements, a number of steps can be taken to address the peak-load problem. Five of the more easily implemented techniques are time-of-day pricing, conservation, load shifting, peak shaving and port closure.

Time-of-day pricing. If users are charged directly for computing services, time-of-day pricing — charging more for transactions processed during peak-load times than at other times — can be a simple, but effec-

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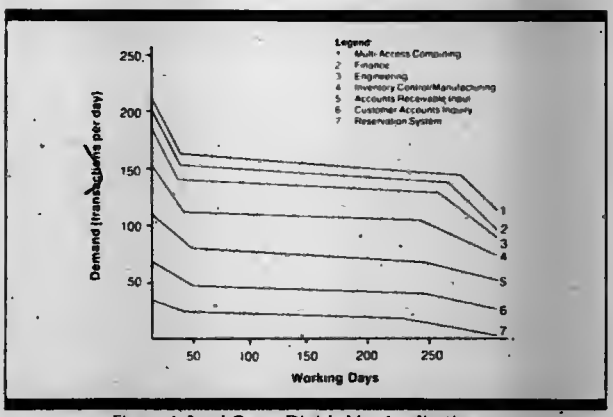

Figure 4. Load Curve Divided by Applications

tive policy. The difference between rates must be substantial, however, to provide a real incentive for off-peak use. It is usually much more palatable to describe the difference in rates to users as a discount for off-peak use, rather than as a penalty for peak use. Thus, the DP department might advertise a normal charge of $400/hour and $100/hour for off-peak use.

Conservation. Just as employees are asked to turn out lights that are not necessary, they can be requested to avoid using computing resources they do not need. As with other conservation measures, however, compliance will vary among individuals.

Load shifting. Outside resources can be used temporarily to delay the installation of an increment of processing power. In highly integrated shops, however, this is sometimes very difficult.

Peak shaving. Although this technique can take several forms, all revolve around identifying those elements that make up the peak and "shaving" them off. Two methods for doing this are:

- Restricting the use of one or more high-resource-using, lower priority applications (for example, a financial modeling package) during peak hours.
- Shifting certain employees' work hours. If applications programmers are heavy users of time-sharing, their work hours can be changed to off-peak hours. Flexible work hours normally result in lowered peak load.

Port closure. In a heavy on-line environment with a large time-sharing load, one method of reducing peak load is to restrict the number of concurrent time-sharing users by restricting the number of ports open to the machine. Of course, this strategy may negatively affect productivity and result in some irate users.

Projecting Need

Projecting need is a critical part of the planning process and perhaps the most difficult estimation in planning for DP resources. Projections of future need are based on several sources, primarily the present processing load, which is used as a base and modified according to assumptions dictated by the business environment. An overall strategic plan for the entire organization — a corporate plan, for example — can be helpful when beginning a DP plan, but it is not absolutely essential.

Many organizations maintain sets of assumptions that are used for planning in other parts of the business (for example, financial planning predictions). Such assumptions may be continuous (a compound growth in sales of 5.3% is forecast for the next five years) or discrete (the company will acquire other companies during 1986 and 1988, adding a total of 200,000 customers to the existing customer base). Using these assumptions can help the DP manager project future work load.

Another source of projected need is the application resource plan, which should be at least as comprehensive as the hardware resource plan. See In Depth/16 for one method of projecting resource requirements for applications systems under development. The advantage of this method is that it requires project development personnel to schedule resource requirements for development, production and maintenance. These schedules must be recognized as educated projections that will change as user requirements become more clearly established. Using the projections of need submitted by applications development teams, the hardware resource planners can project demand and prepare plans accordingly.

IBM's *Business Systems Planning: Information Systems Planning Guide* [2] describes a more complex, two-phase

(Continued on In Depth/18)

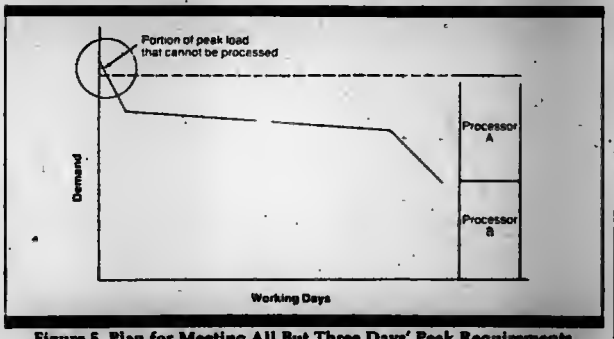

Figure 5. Plan for Meeting All But Three Days' Peak Requirements

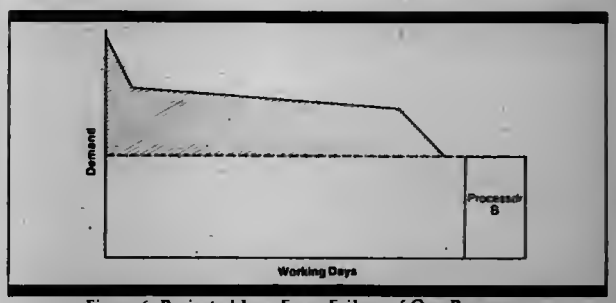

Figure 6. Projected Loss From Failure of One Processor

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IN DEPTH

Getting the Most Out of Project Team Forecasts

Obtaining reliable forecasts of resource requirements from systems development teams has always been a demanding task. One reason is that they often do not know what the user really needs, when the system will be implemented, how much CPU time will be needed to develop and test the system or how much work can be done during a CPU hour.

Because the project team may lack such information, wise resource planners will be skeptical of any projections. These projections must be considered, however, because the project team is the only source for forecasts of the impact of future systems. Because of long lead times for delivery of some types of hardware and for all types of facilities, resource planners need all the advance notice they can get.

Several methods can be used to improve the accuracy of applications development project team predictions. One is to educate the project teams in planning techniques, including assumption preparation and hardware capabilities. Another is to exercise intuitive, "gut-feel" planning. Many managers can produce excellent strategies using intuitive methods.

Recognizing the problems inherent in making resource projections based on systems development team forecasts, the resource planners can use the following method for gathering data for these forecasts. The process outlined here should be repeated regularly; every six months is a good interval.

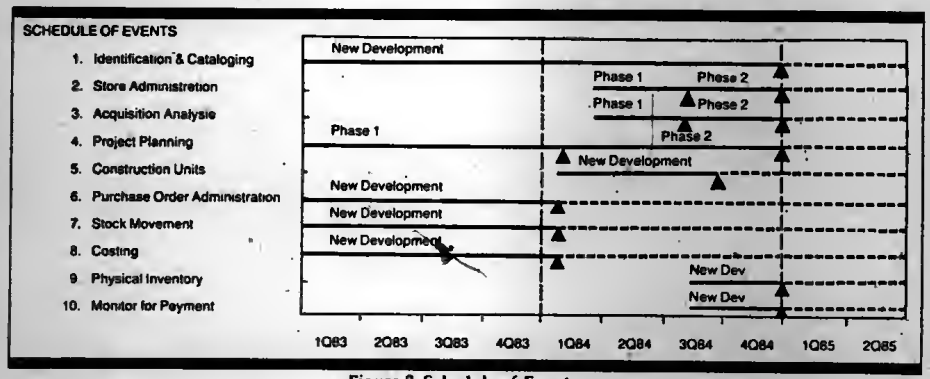

Figure 8. Schedule of Events

Define the units. Figure 7 depicts a form that can be used to describe briefly the system and its subfunctions. This is useful for checking for redundant systems development efforts and for scheduling application implementation and hardware installation events.

Schedule of events. Figure 8 illustrates a sample schedule. The solid lines represent the development phase, triangles depict installation and start of production processing, and dotted lines represent regular maintenance during production status for each subfunction.

Resource requirements. Resource requirements should be stated in terms that are understandable to the development team and the planner. For example, the terms used in Figure 9 are CPU hours translated to percentage of an IBM 3033; gigabytes of direct-access storage and so on. "Not currently available" usually means that the system design has not progressed far enough for the team to even make a guess.

Integration with hardware plan. The results of the first three steps are first integrated into a subset of the hardware plan and later, when all application plans are complete, into the full hardware resource plan.

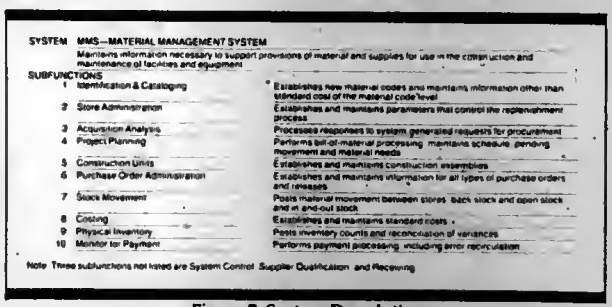
SYSTEM MMS—MATERIAL MANAGEMENT SYSTEM
Maintains information necessary to support provisions of material and supplies for use in the construction and maintenance of facilities and equipment
SUBFUNCTIONS
1 Identification & Cataloging — Establishes new material codes and maintains information other than standard cost of the material code level
2 Store Administration — Establishes and maintains parameters that control the replenishment process
3 Acquisition Analysis — Processes responses to system generated requests for procurement
4 Project Planning — Performs bill-of-material processing, maintains schedule, pending movement and material needs
5 Construction Units — Establishes and maintains construction assemblies
6 Purchase Order Administration — Establishes and maintains information for all types of purchase orders and releases
7 Stock Movement — Posts material movement between stores, back stock and open stock and in and-out stock
8 Costing — Establishes and maintains standard costs
9 Physical Inventory — Posts inventory counts and reconciliation of variances
10 Monitor for Payment — Performs payment processing, including error reconciliation
Note: Three subfunctions not listed are System Control, Supplier Qualification, and Receiving

Figure 7. System Description

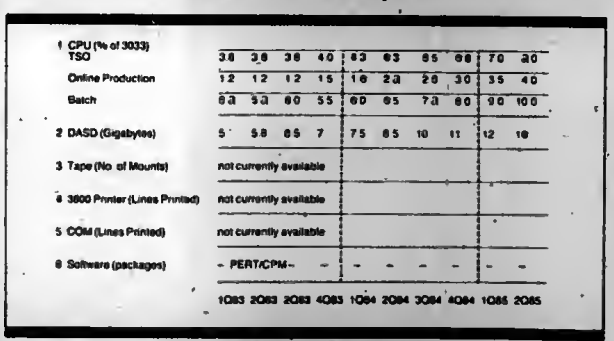
1 CPU (% of 3033)
TSO 30 30 30 40 | 60 60 65 60 | 70 80
Online Production 12 12 12 15 | 10 20 20 30 | 35 40
Batch 80 90 80 55 | 60 65 70 60 | 90 100
2 DASD (Gigabytes) 5 5.8 6.5 7 | 7.5 8.5 10 11 | 12 10
3 Tape (No. of Mounts) not currently available
4 3800 Printer (Lines Printed) not currently available
5 COM (Lines Printed) not currently available
6 Software (packages) – PERT/CPM –
1Q83 2Q83 3Q83 4Q83 1Q84 2Q84 3Q84 4Q84 1Q85 2Q85

Figure 9. Resource Requirements

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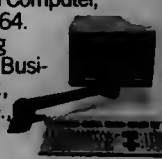

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*Benchmarks using CPU-intensive, interpretive BASIC programs.

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IN DEPTH

Outline for a Resource Plan

I. Executive Summary
- A. Basic description of DP activities, purpose of plan.
- B. General assumptions regarding DP environment.
- C. Financial impact of plan, cost per year, cash flow requirements.
- D. Major hardware/software summary.

II. Strategy
- A. Milestone events.
- B. Planned activities.

III. Project Analysis
- A. Summary of each major system (using a form similar to Figures 7, 8 and 9).

IV. Demand System Impact
- A. Time-sharing.
- B. Graphics.
- C. Open shop use.

V. Equipment Plans
- A. CPU, memory, channels.
- B. Direct-access storage.
- C. Tape drives.
- D. On-line unit record, data entry.
- E. Off-line unit record, data entry.
- F. Communicationa devices.
- G. Satellite processors.

VI. Software Analysis (Operating System)
- A. Installed software categories (operating system, communications software, data base management software, productivity aids).
- B. Forecast software requirements for period of plan.
- C. Major software events (event chart).
- D. Software configuration chart.

VII. Data Communications Network
- A. Network configuration.
- B. Network events (chart).

VIII. Personnel Plan
- A. General staffing requirements.
- B. Training requirements.
- C. Recruiting requirements.
- D. Project staffing charts.

IX. Facilities
- A. Building modifications required.
- B. Space needs for projects.
- C. Facility event chart.

X. Other
- A. Word processing evaluation.
- B. Text-retrieval impact.

(Continued from In Depth/15)

approach to business systems planning. The first phase — identification of requirements — describes the relationships among the various elements of an information system network and is not limited to the computerized information system network.

The second phase — definition — documents a long-range applications development plan for the design and implementation of decision-oriented management information and control systems that use integrated data bases. The guide is comprehensive, including such elements as methodology descriptions, interview guides, end-product outlines, techniques used to gather requirements in various industries and examples of the benefits that can result from the use of this technique.

Latent Demand

Latent demand — the work load that would be processed if there were enough resources — is a well-known phenomenon to seasoned DP managers. Latent demand is the basis of two fundamental laws of data processing:

- Work load expands to fill existing capacity.
- There is never enough disk space.

Latent demand builds up during periods when DP resources are saturated and processing needs continue to grow. When new capacity becomes available, this demand is quickly imposed on the system.

Taking latent demand into consideration when projecting need is a necessary part of DP resource planning.

Planning Steps

Specific resource planning is necessarily more detailed than a long-range DP plan. Considering each specific event (like the installation of an additional string of disk drives or a major software package) and calculating the impact of that event on the surrounding resources result in better control of resources.

The formal resource plan sometimes omits systems software modifications. However, changes to operating system software and the installation of new systems software modules can seriously affect existing applications systems and can alter the processing efficiency of the installed hardware. Changes to the operating system should therefore be integrated with the formal resource plan.

Data communications network planning is also sometimes omitted from the formal resource plan. As the complexity of the network grows and as the relative costs of data communications rise, however, it becomes more critical to include this element in resource planning.

Maintaining an event chart for each class of resource will facilitate both planning and scheduling. Event charts should be prepared for installing CPUs, Dasd, tape drives, printers, purchased software and applications software developed in-house.

Far too many DP installations operate without a comprehensive resource plan. If an installation is to prosper, the DP manager should improve its resource planning skills. The outline in the box alongside is a guide to developing a resource plan and should be adapted to the needs of the organization.

Application project teams and operating system support teams should be included in the plan development. The plan should be kept current and reviewed regularly. The data processing steering committee can be involved in a higher level review of the resource plan.

REFERENCES

1. Much of the material in this section is taken from "Matching Computing Demand and Supply," by J.F. Chilcott, director of management services, British Gas Corp. This paper was presented at the Iusec Conference, Rome, Italy, May 1981, and is used with permission of the author.

2. IBM Business Systems Planning: Information Systems Planning Guide, *second edition, 1978, GE20-0527-2.*

BIBLIOGRAPHY

1. Drucker, Peter F. Management, Tasks, Responsibilities, Practices. *New York: Harper & Row, 1973.*

2. McLean, E.R., and Soden, J.V. Strategic Planning for MIS. *New York: J.W. Wiley & Sons, 1977.*

3. Steiner, George A. Comprehensive Managerial Planning. *Oxford OH: The Planning Executives Institute, 1972.*

About the Author

Robert E. Umbaugh is a vice-president of Southern California Edison Co. in Rosemead, Calif., where he is head of all data processing activities. He has been with Edison for 10 years.

He is also the consulting editor for the Auerbach Data Processing Management information service.

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Documenting

BY WILLIAM C. RAMSGARD

Documentation is a curse to organizations that keep everything and anything. But where should the systems department draw the line?

Many people start a new job by reading policy books, accounting manuals or texts from the last consultant's study. They can only go to work when the boss, or more likely the person who just left the job, explains how tasks are to be done. The new employee often has no written procedure to follow; or, if he has one, it is out of date.

In most departments at most organizations, there is little documentation to describe how to do the job. A few stable frameworks, such as the chart of accounts, bills of materials and manufacturing specifications, provide a thin veneer of consistency. But while they describe *what* can be done, they don't tell how.

In data processing, every reference work,

IN DEPTH

training course and department manager says, "You document." This appears to mean that you collect almost every written scrap of paper related to the project and find some way to organize and save it. It means using a method of explanation so clear that a programmer or analyst who never before worked on this project can maintain it.

Finally, when the actual function changes (at 3 a.m. or three years from now), the programmer who changes the code will also be required to change accurately all the documentation before ever being allowed to work on any other job. This requirement forces all changes to be as clearly written as the original material. The documentation is then always a complete and accurate reflection of the process.

The problem with this requirement is that it is never met.

Our objective seems to be perfect documentation in data processing, while all other functions have none. Yet, the work between DP and any function is a partnership: A contract must be drawn. The beginning stages include objectives, letters of authorization, memos and many forms of political paperwork.

Once the project exists, and definitely when it is completed, this type of documentation has no value. In the political environment of your organization, you will find that no authorization will protect you if things go sour. Do not save this documentation. Do not expect to be able to hide behind it.

DP often lives by the senseless rule that any documentation is better than none. The term "documentation" includes every fact, every finding, almost every thought of alternatives, recommendations and observations. The problem is, the most complete documentation packages take too long to compile and are seldom read.

The problem with documentation is that it is frozen in time. It is history. The real world changes and moves on — documentation does not.

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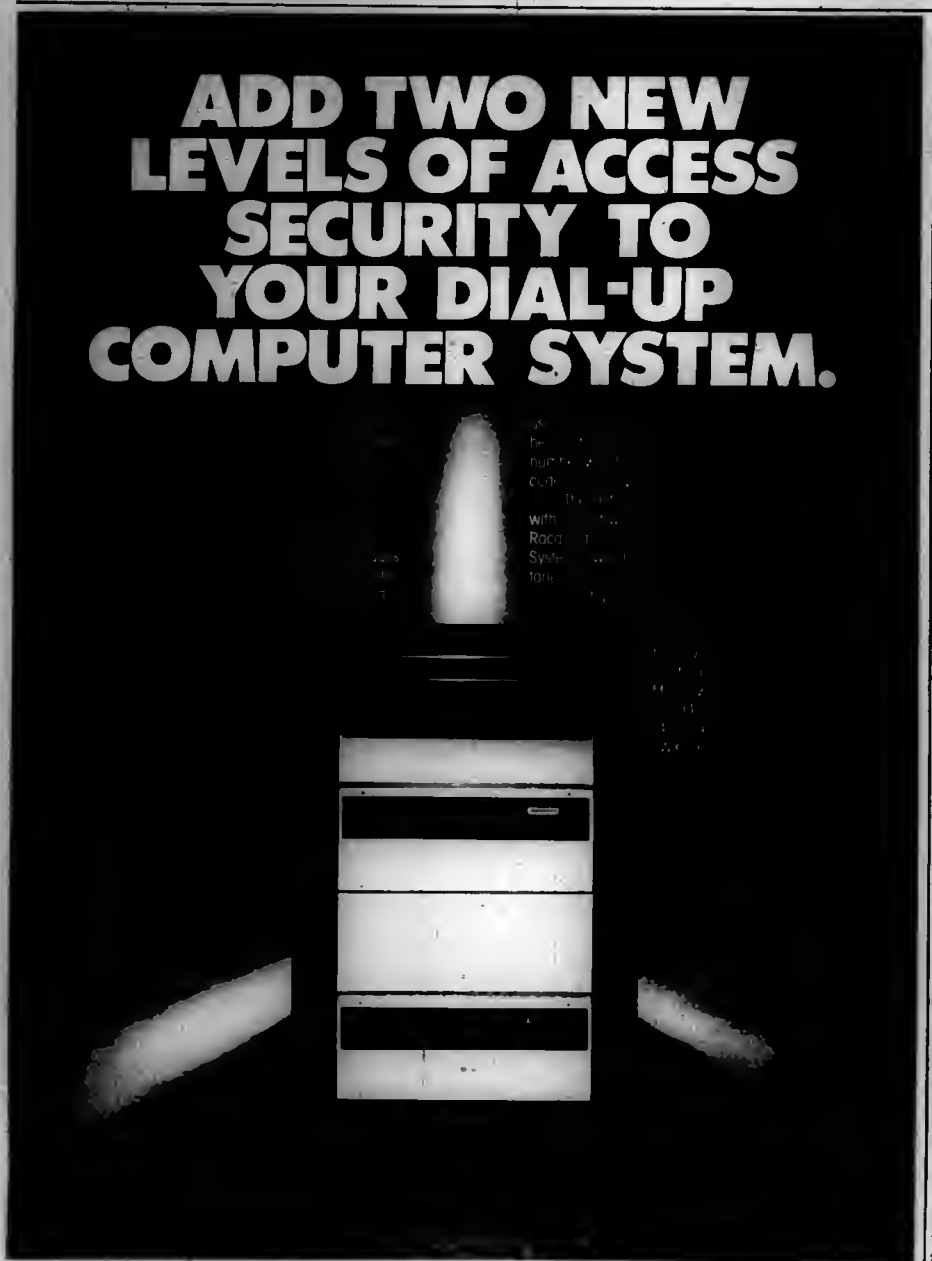


New Systems

One of the early steps in any systems development project is to collect facts about the existing system. Interviews are conducted and forms and reports are collected. Sometimes, more enlightened investigators will verify the facts and broaden their personal understanding by actually observing the processes or by physically walking paperwork through the system.

The output of these early phases of investigation is some form of documentation. It may be a specific flowchart or it may be some type of narrative. Traditionally, the method of preparing documentation is highly dependent on the developer's orientation.

Three groups prepare documentation or specifications: programmer/analysts, users and systems analysts. Any one of the groups may select any method, yet each group has different goals as demonstrated by the choice of documentation tools and approaches.

Programmer/Analysts

The programmer/analyst's interests are directed toward optimum mechanized processing. This is the most difficult job. It requires translating human effort and understanding into electronically comprehensible code, which must be effective. Misspelled words or errors in punctuation can cause delay now or disaster later.

The cryptic shorthand of programmer/machine communication frequently carries over to the human documentation style. It might be expressed in any one of three major classifications: flowcharts, narrative and cryptic English.

Flowchart documentation. Some methods are complex and obscure. Whatever visual shorthand method is selected, it must be explained to the user community. Templates have more symbols than users need to understand. Programmer/analysts fail to appreciate that the user community often has no idea what the arrangements and symbols mean.

Diagramming complexity and strange syntax frighten the user. Coupling, cohesion, logical inversions, functional decomposition and

STOP DOCUMENTING

many other methodology terms breed user confusion and mistrust. The programmer/analyst uses a background of DP work experience to dive immediately into detailed module design. The documentation can be detailed and correct, but communication with the user might be almost nonexistent.

Narrative. It is difficult to organize concepts and explain them clearly in paragraph form. However, eight or 80 pages describing how to process a new account will be boring and very possibly incomprehensible. Brevity and clarity are essential.

Cryptic English. Pseudocode or structured English can be difficult for the user to master.

Development by the User

After 25 years of technical development, data processing has discovered a missing link — the user. The entanglement of languages, packages and tools has been a floodtide toward complexity. The user was forgotten in the flurry.

Structured analysis and data base writers recognized the problem. No one in DP had the user's interest at heart. Rather than trying to turn DP personnel around, they universally have demanded user involvement in the process. They provide some tools: data flow diagramming, entity development, user views and so forth.

What is missing is any way to get scope. A user must limit his documentation to a specific area. By training and job inclination, the accountant, production control manager or engineer is seldom prepared to record the excruciating detail of even his own work process in order to support the equally demanding requirements of a computer system.

Untrained, the user will document with narrative. With training, a simple structured analysis approach using only one or two symbols may work well.

But the structure and data base people expect too much. The user has a job to perform. Like the analyst/programmer, the user representative is involved with an all-consuming functional orientation. The top-down functional decomposition approach is not possible. If the user contact is at the managerial level, the development specification will be broad and will omit the necessary detail to get the job done.

Furthermore, users have difficulty with abstractions of local views and entity development. They are at their best developing descriptions of the current physical process. It takes a trained systems analyst to find and suggest alternatives.

Development by Systems Analyst

Detail *and* big picture are the province of the systems analyst. He is the one person, except for an internal auditor, who can easily cross functional boundaries. He can examine details, functional efforts and organizational activity without the parochial viewpoint of a hardware/language/package configuration or the limited view of the functional manager.

The choice of tools may be just as obtuse as any the programmer/analyst uses. Preferably, the analyst, in full partnership with the user, can prepare specifications using structured analysis for understanding and mini specs for coding, which can be clear, complete and more.

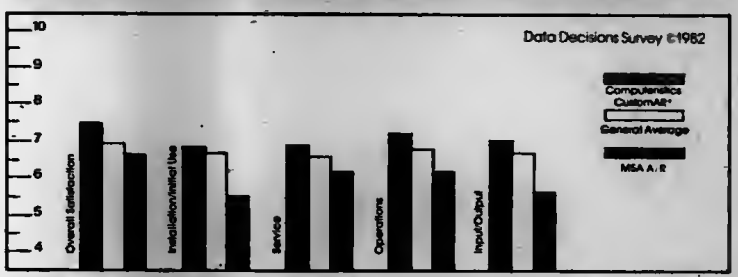
The analysis passes beyond the scope of the functional manager's department. The specification should be a communication between the user and technical DP staff, yet both groups should be satisfied with this documentation.

Usable Documentation

The person or group documenting reflects a style, but the style does little to affect the accumulation of unneeded papers. Any information or system can be recorded, organized and prepared in formal reports and other structures. Most of the documentation is insurance paper for the highly political work of systems development. A truly usable documentation product appears in only two forms:

- Development specifications — which are to be eventually destroyed.
- Working procedures — the single documentation category of a successfully developed system that

USERS RATE COMPUTERISTICS SOFTWARE BEST.



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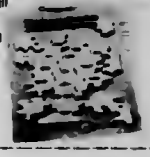

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IN DEPTH

needs to be retained.

A contract of understanding between DP and the user can be developed only if well-defined specifications are prepared. The existing system must be fully comprehended by both DP personnel and the management of the target business function. What exists then is the base from which improvements are created. Problems arise when mutual understanding does not develop.

The method of communication and documentation, except in the smallest systems, is by some written process which we will call "development specifications."

The dual understanding requirement of "what is" and "what will be" is often ignored. New systems are frequently designed without any investigation or comprehension of the existing system. By not first documenting that system and verifying it at both the managerial and clerical level, the designer can miss essential requirements. "What is" must usually be incorporated into "what will be."

The development specifications are directed toward the analysts, programmers, procedure writers and users who are about to combine resources in a new way to accomplish a task. A second iteration needs to contain only the final views of what will be. This development specification outlines the tasks that must be accomplished by machine or exacting human action. This documentation is the what and how of detail design in outline form.

Development Specification Life

What happens to the specification once it becomes a working set of programs and procedures? After all of the development work is complete, this mass of paperwork changes into documentation. It is generally organized into sections and filed in cabinets. Occasionally, it is microfilmed.

After a short period of time — a few cycles until all of the bugs are worked out — the documentation is no longer treated as reliable material because of possible changes to the system. We live in a blameless environment where functional managers react to situations in creative ways for the benefit of the organization. This causes change. Much is done, even without revising information processing programs. Where changes are made (traditional program maintenance), no one can ever be sure that the written documentation has also been updated. A short time span, therefore, drastically devalues the documentation.

So what should data processing do with all of the interview proceedings, meeting minutes, report layouts, source listings, test documentation and so forth? The answer may be shocking: Destroy them. The entire purpose of the development specification was to build an information system. Sources and object code and JCL are all in the computer room. Data definitions are recorded by the data base administrator or in the data dictionary. In a worst-case situation, there is a repository of current file layouts.

The specification has been implemented with detailed administrative procedures and exacting computer code. When change is required, the existing procedure and code must be amended. No part of the business world has ever done well at keeping a history of change up to date. Why should data processing be different? After the development specification has served its purpose, destroy it. After modification requirements have been instituted and accepted, trash the paperwork.

Do not save what you do not trust.

Working Procedures

The retainable form of documentation is only the material that is required, in its existing form, to get the job done. It is the detailed "how" of the function as it exists today.

By definition, many items created by the development specification have to be included in this category. Keep source code, object code and JCL. Procedures at any level including methods of dealing with exceptions, limits, handling and errors are also kept.

But much saved paperwork serves no purpose. Keypunch instructions may include a card layout. This is part of a working procedure; a report

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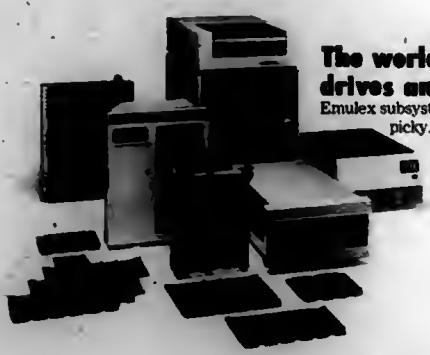

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STOP DOCUMENTING

IN DEPTH

layout is not. Once the process is running, you have the actual documents created by the system for a starting point to make changes. Old layouts filled with Xs and 9s, handwritten on a print layout form, are not worth saving. Destroy them.

The bonds of documentation are strong. To even suggest the destruction of all those beautiful top-down, hierarchical, structured, carefully organized documents is enough to force many computer science fanatics to turn over in their project management methodologies. Offices are constantly rearranged and production lines reorganized. It is also likely that the company internal telephone number list is constantly changing and way out of date.

We have blueprints for factory and office structures and data bases for the basic information processed over and over again. But specific business processes and office arrangements, like thinking, are extremely volatile. It helps to record what is happening now, because what happens tomorrow will be different. There is no payback in documenting for the purpose of maintaining a history. History, in the sense of business information processing, is a worthless ratification of times gone by.

Test yourself. Will you allow your people to redesign any of your systems based only on data available from the existing documentation? There is one exception, which will be discussed later. Otherwise, save and maintain the documents that tell how things work right now. Destroy the rest.

The procedures are sufficient to get the job done when:

- They explain briefly and accurately each human and machine activity.
- They provide for all possible variations you can think of now (but not forever).
- They contain enough comments in the program code portion so that a new hire with adequate technical experience can maintain the programs.

Warning: Working procedures do not belong in a book. Procedure manuals are wasteful collections of bureaucratic constraint. Everybody does not do everything, so why are complete procedure manuals passed out to everyone? A working procedure is a battered document used frequently by people who actively do the job.

Organizations should have the master procedures filed and working copies out on a distribution list to the group that works with them. Stop the wholesale distribution of any type of procedure.

Identify the Essentials

Documentation is a curse in most organizations. We mistakenly keep anything that is written down. Much of what is not necessary is created simply to observe internal standards.

Those pieces of the development specifications that are justifications, approvals or history should be destroyed. Keep as documentation only that part of the material that actually works in the processing cycle. This requires heavily commented programs and complete current procedures. Nothing else is necessary.

There is one test for good documentation. Bring in an outsider and let him follow the system. If it is clear to a stranger, it is well-documented. Remember, employee turnover is fast. Plan for it.

There is one exception to the working procedure rule. If you specify well (top-down with a very simple structured analysis and mini specs), the using function(s) may choose to retain the specs. For the very first time, they have a logical and clear explanation of how things work from general to specific.

If they save that document and train new people with it, you've done well.

About the Author

William C. Ramsgard is an associate senior systems analyst at Niagara Mohawk Power Corp. in Syracuse, N.Y. He provides technical training to personnel of the Management Systems and Services Department.

Before joining Niagara Mohawk in 1980, Ramsgard was an operations analyst for Agway, Inc. Prior to that, he was manager of factory and office systems and procedures for Crouse-Hinds, Inc.

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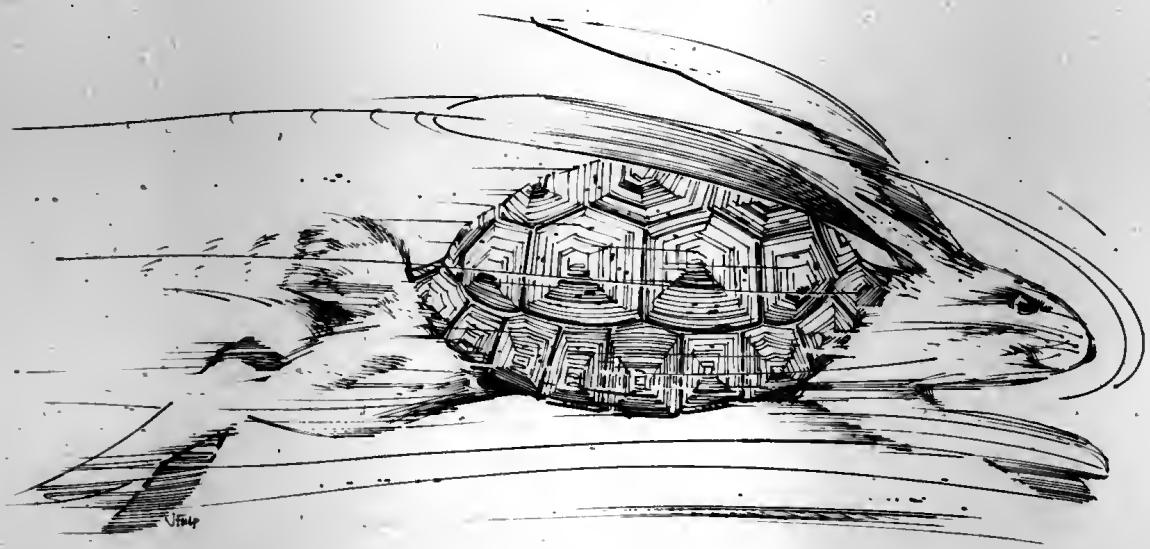

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Program Permits IBM 8100 Users To Trade for Syfa

BOULDER, Colo. — Computer Automation, Inc. has put together a trade-in program that will allow IBM 8100 users to trade their systems in for one of Computer Automation's Syfa systems.

According to the company, the program is directed at those 8100 users who have purchased "two or three" 8100s for program development and have "encountered significant or even insurmountable problems in applying the machines to specific applications."

Computer Automation President D.H. Methvin said the program was inspired by the Syfa systems' superior performance in benchmark tests against the 8100. Methvin said the tests reportedly showed the Syfa systems were easier to program and displayed greater power than the 8100s.

"We are really looking for the user who will start with a few systems, then wind up ordering 30, 40 or 50 more," Methvin explained. He added, however, that the company will not make a deal with someone "who has 50 of the 8100s and wants to swap for 30 Syfas." Methvin said terms for trade-in transactions will be worked out on an individual basis, but said, in some cases, "I could see where we would allow an 8100 purchaser to recover the full price of his IBM when he signs an order for our systems." The trade-in plan also does not apply to those 8100 users that lease their systems.

Computer Automation claims its Syfa series is best suited for large companies that have minicomputer-based networks with large, centrally located IBM mainframes. A spokesman said the Syfa systems communicate with IBM mainframes using IBM's Systems Network Architecture/Synchronous Data Link Control communications protocol.

Methvin said his firm is in the process of putting together several new small packaged Syfa systems specifically designed for networking applications. He said he expects the systems to be priced well below comparable IBM minicomputer-based systems.

More information can be obtained from the vendor at 4890 Sterling Drive, Boulder, Colo. 80301.

Lisp-Based Workstation Debuts From Symbolics

CHATSWORTH, Calif. — A supplier of artificial intelligence (AI) systems last week replaced its existing processor with a Lisp-based workstation that reportedly outperforms typical superminis by at least twofold, while costing an average of less than $100,000.

Symbolics, Inc. claims to have optimized its single-user Model 3600 to run very large programs characteristic of scientific, engineering and other highly technical applications.

Intended for processing symbols rather than numbers, the 36-bit system comes with a one million instructions per second (Mips) CPU that supports up to 34M bytes of main memory and 1.8G bytes of disk storage, a Symbolics spokesman said.

The 3600 also comes with an operating system written in Zetalisp, an enhanced version of Lisp, the AI community's preferred programming language. Lisp is optimized for applications requiring the reorganization or manipulation of data structures and thus allows users to solve complex computing problems that defy easy solution with any other language.

Together, the 3600's 1-Mips processor, large-storage capacity and Lisp-based software environment reportedly make the system suitable for computing-intensive applications such as computer-assisted language translation, training simulation, robotics, circuit design and program development. These and related applications typically involve massive programs that require huge volumes of computing power to execute — volumes that are usually associated only with mainframes.

To speed software development, the system includes incremental compilation and dynamic linking among its package of standard software features. Symbolics credits the two capabilities with shrinking the edit-compile-debug loop in large-program development to as little as 30 seconds. With a conventional minicomputer, by contrast, the edit-compile-debug cycle typically can take as long as an hour, the spokesman said.

As a further aid to software generation,

(Continued on Page 74)

Printer Line Fits DEC LP-32 Printers

STAMFORD, Conn. — Digital Associates Corp. has announced a line of printers that are compatible with Digital Equipment Corp.'s LP-32 printers. The printers can be used with DEC's VAX-11 series of processors.

The Digital Associates printers are plug-compatible with DEC's LP-32AA, LP-32BA, LP-23EA, LP-32EB, LP-32GA and LP-32GB units and can be used in conjunction with the DEC DMF-23 VAX controller. The firm offers a selection of other printers as well, Digital Associates said.

Printers range from $6,500 to $20,000, the vendor said from 1039 E. Main St., Stamford, Conn. 06902.

For Architects, Engineers, Scientists

Graphics Workstation Introduced

PITTSBURGH, Pa. — A high-resolution graphics workstation for architectural, engineering and scientific applications was introduced by Three Rivers Computer Corp. here last week.

Jointly developed by Three Rivers Computer and the UK-based International Computers Ltd., Perq 2 is the latest in the line of Perq graphics products.

Perq 2 runs under Bell Laboratories' Unix operating system and is designed to function as an independent workstation or as part of a distributed network, a spokesman for the vendor maintained.

Standard system features include a 13-in. graphics display, an 8-in., 32M-byte Winchester disk, a detached keyboard, graphics tablet and an electronics cabinet containing its microprocessor, main memory and fixed disk, according to the vendor spokesman.

Options include a 20-in. landscape display screen with 100 dot/in., an additional 32M-byte hard disk, floppy disk drive for software backup and program transportation, a ¼-in. tape streamer cartridge, a 1,000 line/min electrostatic printer/plotter and a 200 char./sec dot-matrix impact printer, the vendor spokesman maintained.

A typically configured system is priced at $24,900 and is immediately available, according to the spokesman.

More information is available from Three Rivers Computer, 720 Gross St., Pittsburgh, Pa. 15224.

Desktop Line Compatible With IBM Personal Computer

SCOTTSDALE, Ariz. — Phaze Information Machines Corp. has introduced a line of desktop computers that are compatible with IBM's Personal Computer.

The P9000 family of multifunction workstations performs the local processing tasks of the IBM Personal Computer, according to a spokesman for the vendor. The Model P9010 Information System can either emulate an IBM 3278 Model 2 or the IBM Personal Computer, performing word processing, spreadsheet planning and other Personal Computer tasks. It can access IBM mainframes through an IBM 3274 or 3276 Type A coaxial adapter port or it can communicate through an integral serial communications interface and an external modem, the vendor said. The system can also reportedly be configured with its own printer, the vendor spokesman maintained.

Pricing on the P9010 series begins at $4,990, the vendor said from 7650 E. Redfield, Scottsdale, Ariz. 85260.

HP Unveils Graphics Tablet

PALO ALTO, Calif. — Hewlett-Packard Co. has unveiled an interactive graphics tablet that reportedly allows users to create original computer graphics, digitized sketches, strip charts and maps on the HP 2627A color graphics terminal.

With the HP 17623A graphics tablet, a stylus pen-like device is used instead of the graphics terminal's arrow keys to develop graphics more easily, the vendor explained.

This product is priced at $1,920. Further details are available from the vendor at 3000 Hanover St., Palo Alto, Calif. 94304.

HP 17623A Graphics Tablet

Interactive Graphics Tablet

Tape Drives Fit DEC, DG Units

SOMERVILLE, N.J. — A line of magnetic tape drives for use on Digital Equiment Corp. PDP-11, LSI-11 and VAX-11 systems, as well as Data General Corp.'s Nova and Eclipse computers, has been unveiled here by Unitronix Corp.

The DMT3000 series is rack-mountable and made of a single capstan tape drive type with a tension-arm tape buffer, according to the vendor. It features recording density ranges of 800 to 1,600 bit/in., with a 45 in./sec tape speed and a rewind speed of 160 in./sec.

The tape drives are available for $7,500, complete with controller, Unitronix said from 197 Meister Ave., Somerville, N.J. 08876.

Graphics Board for Mime Unveiled

NORWOOD, Mass. — Raytheon Data 5ystems Co. (RDS) has expanded its RDS-200 series of information processors with the addition of two models that both feature extended global search and replacement capabilities for word processing.

The RDS-210 single diskette and the RDS-220 dual diskette systems have all the text manipulation, document assembly capabilities and menu-based formats standard with the existing RDS-200 series, the vendor said. The units also reportedly feature automatic search functions, enabling the user to find and replace systematically specified text throughout a document.

Basic pricing is $9,549 for the single diskette system and $11,105 for the dual version. Further details are available from the vendor at 1415 Boston-Providence Turnpike, Norwood, Mass. 02062.

RDS-200 Processors Expanded

5T. LOUIS — Micro-Term, Inc. has announced a graphics board for its Mime 740 terminals reportedly capable of reproducing Tektronics, Inc. Plot 10 and Digital Equipment Corp. Regis graphics packages.

In a Plot 10 mode, the board offers full Tektronics 4010 compatibility including point plot, point-to-point plot and relative color draw. The Plot 10 board costs $1,095, the vendor said.

An optional Regis mode will be available this summer and will enable the user to display normal backgrounds on four pages of memory or four shades of gray on two pages of memory. The Regis option also includes a zoom capability that can enlarge a particular display two or four times. The Regis option costs $295, the vendor said from 1314 Hanley Industrial Court, 5t. Louis, Mo. 63144.

Intel Announces 86/435 Processor

SANTA CLARA, Calif. — Intel Corp. has announced the 86/435, an addition to its line of transaction processors.

Aimed principally at large users and OEMs, the 86/435 can support up to four users and features multiuser, multitasking and multiprogramming capabilities, the vendor said.

The 86/435 uses Intel's Itaps operating software and costs $25,500 for a 768K-byte system with 35M bytes of disk storage and 1M byte of diskette storage, the vendor said from 3065 Bowers Ave,, Santa Clara, Calif. 95051.

Alloy's Boards Link DEC, CP/M

NATICK, Mass. — Alloy Computer Products has introduced a line of 8- and 16-bit boards that reportedly enable Digital Equipment Corp.'s PDP-11 and VAX-11 minicomputers to run any Digital Research, Inc. CP/M-based software programs.

The UCP-11 is said to plug into the back of a VAX-11 or PDP-11 and acts as a co-processor executing CP/M programs, operating in parallel with the DEC processor without degrading the latter's performance. The unit can be activated from any terminal attached to a DEC network, according to the vendor.

Pricing on the boards starts at $1,495.

Further details are available from Alloy at 12 Mercer Road, Natick, Mass. 01760.

'How-to' Handbooks On OA Systems Out

CAMBRIDGE, Mass. — A "how-to" series of handbooks on implementing office automation and communications systems has been announced here by McQuillan Consulting.

The *McQuillan Action Planning Guide* consists of four volumes containing step-by-step instructions and checklists: *Planning Your Office Automation Strategy; Planning Your Architectural Design; Planning the Selection of Your Systems;* and *Planning the Implementation of Your Pilot.*

Subscription to this series costs $4,995. The first volume will be available in May, the publisher said from 380 Harvard 5t., Cambridge, Mass. 02138.

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Symbolics Lisp-Based Workstation Announced

(Continued from Page 71)

the 3600 boasts a hardware-assisted storage management capability that automates the time-consuming task of allocating and reclaiming memory space. The storage management feature relieves programmers of one of their most arduous housekeeping duties and thus enables the workers to channel their energies into more productive activities, the spokesman said.

Although its main components fit inside a workstation occupying no more desk space than a typical display terminal, the 3600 packs as much processing power as Digital Equipment Corp.'s Decsystem-2060 running Lisp. The Symbolics machine also provides two to five times more computing power than a VAX-11/780, the source said.

High on the workstation's list of key software features is its ability to support multiple programming languages, including Fortran 77, Pascal, C and Interlisp. This multi-language capability reportedly allows Lisp initiates to migrate to the artificial intelligence language and, at the same time, preserve their large investment in existing programs.

The 3600 also supports an enhanced version of Flavors, an object-oriented programming language that permits the system's 1,100 by 800 bit-mapped video screen to create and manipulate multiple overlapping display windows, the spokesman said.

On the hardware side, the system features a 10M bit/sec Ethernet local networking capability and a choice of either color or black-and-white graphics. In addition, the workstation incorporates a stack-oriented, "tagged" architecture in which every piece of data inside the system is identified by a particular label or tag.

Purportedly designed from the ground up to run Lisp, the 3600 is said to supplant Symbolics' first product — the LM-2, a descendant of an AI machine developed at MIT.

A basic 3600 configuration incorporates 2.3M bytes of main memory, a built-in 169M-byte Winchester disk unit and a three-button mouse for cursor positioning. Options available with the system include a 20M-byte cartridge tape unit, floating-point processor and 10 page/min laser printer, among others.

A typical 3600 configuraton costs $85,000. The system is available from Symbolics at 9600 DeSoto Ave., Chatsworth, Calif. 91311.

Subsystems Target DEC

WESTMONT, Ill. — First Computer Corp. has introduced a family of magnetic tape storage systems based on Cipher Data Products, Inc.'s Cachetape 125.

The tape subsystems are compatible with Digital Equipment Corp.'s LSI-11, PDP-11 and VAX-11 computer systems, according to the vendor. They are available in two models: the TS09/TSV09 series, which provides single 1600 bit/in. density, and the TS10/TSV10 series, which provides dual 1600/3200 bit/in. densities.

Prices for these products start at $7,800. Additional details can be obtained from 645 Blackhawk Drive, Westmont, Ill. 60559.

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Specifically, MSP's MANAGER family helps you model and document data structures and programs, and helps you design data base and file systems.

Disaster Recovery Service Offered

RADNOR, Pa. — A disaster recovery service has been announced here by Sun Information Services Co. (Sungard).

The Testable Contingency Plan reportedly provides organizations of all sizes with a customized tested disaster recovery plan. A typical plan would, for example, define the client's disaster recovery organization, outline procedures for initializing the disaster recovery process and for restoring processing, define site restoration and provide for two tests at a Sungard Recovery Center, according to a spokesman.

Pricing on these services depends on the size of the company and installation. Further details can be obtained from Sungard at 280 King of Prussia Road, Radnor, Pa. 19087.

Multiuse Diagnostic Tool Targets Nets

ATLANTA — Computer Peripheral Systems, Inc. has introduced a multiuse diagnostic and installation tool for data communications networks.

The product, called Tap, is said to provide bidirectional line monitoring as well as other utility functions.

The pocket-sized product requires no ac power and is intended for both portable and permanent installations. It sells for $225. The vendor can be reached through P.O. Box 98282, Atlanta, Ga. 30359.

Anadex DP-9625A Printer Receives Enhancements

CHATSWORTH, Calif. — Anadex, Inc. has enhanced its DP-9625A, a multimode printer. The unit now provides both single- and double-pass printing to achieve near letter-quality printing. The unit can also produce correspondence, condensed and data processing quality printing as well as graphics.

Also, the vendor has added an additional mid-range print speed. The unit now can print at 60 char./sec at 12 char./in. with proportional spacing, the vendor said.

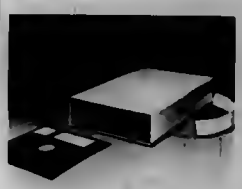
The DP-9625A costs $1,995, the vendor said from 9825 DeSoto Ave., Chatsworth, Calif. 91311.

Floppy Drive Out for Apple

REDWOOD CITY, Calif. — A floppy disk drive for Apple Computer, Inc. Apple microcomputers has been introduced by Algol Technology, Inc.

The Model FDD-810 Thin-Line Floppy Disk Drive has a rear-panel locked switch that reportedly overrides the write-protect notch on diskettes. The switch does away with the use of tape or cutting holes to change or reverse diskettes.

The disk drives cost $350 each. Algol Technology is located at 303-3 Convention Way, Redwood City, Calif. 94063.



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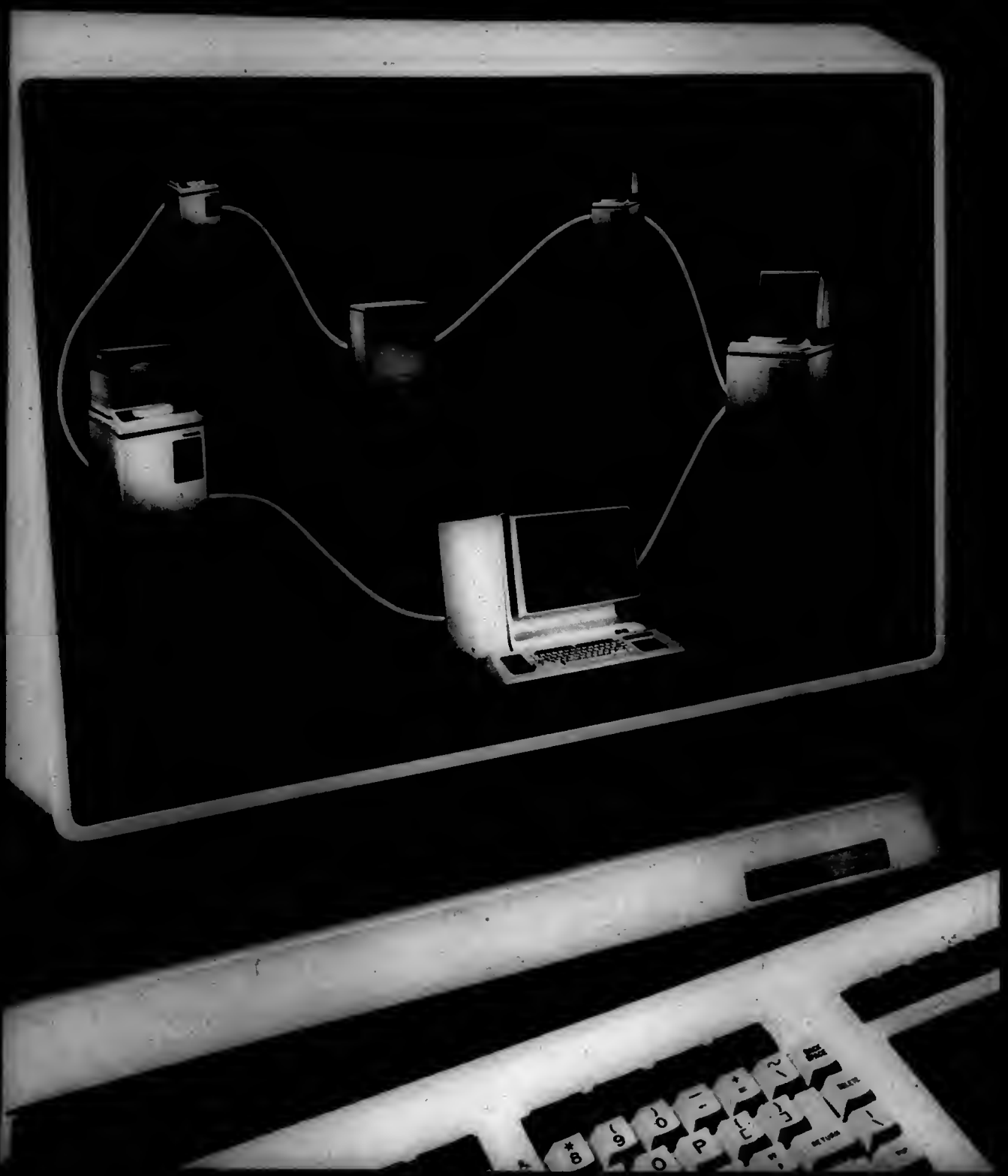

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The DN300 is fully compatible with Apollo's DN400, DN420, and DN600 color computational nodes and supports the same multiprogramming environment, large virtual address space, network communications, multi-window display management, and extensive command library as other DOMAIN nodes. The DN300 connects directly and easily to any new or existing Apollo DOMAIN network. Or it can be used as a standalone workstation. Which means that you can configure the type of network that exactly suits your staff and working environment.

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And you save money by sharing your expensive peripherals—disks, tape drives, printers and plotters. The DSP80 also provides every user with access to specialized services such as communication gateways, large-scale file storage, and print/plot spooling.

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USA price $9,933, system builder, quantity 35 DN300 with .5Mb memory, 17-inch graphics display, network interface, and AEGIS operating system.

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The Domain network gives you low entry cost, high performance, easy and natural incremental growth, reliability, and long-term investment protection. And it gives your technical staff the excitement and satisfaction of working with an innovative, highly productive new tool. For more information on the Apollo Domain processing system, call Apollo's marketing department at (617) 256-6600, extension 608, or write Apollo Computer Inc., 15 Elizabeth Drive, Chelmsford, MA 01824, attention Marketing Communications.

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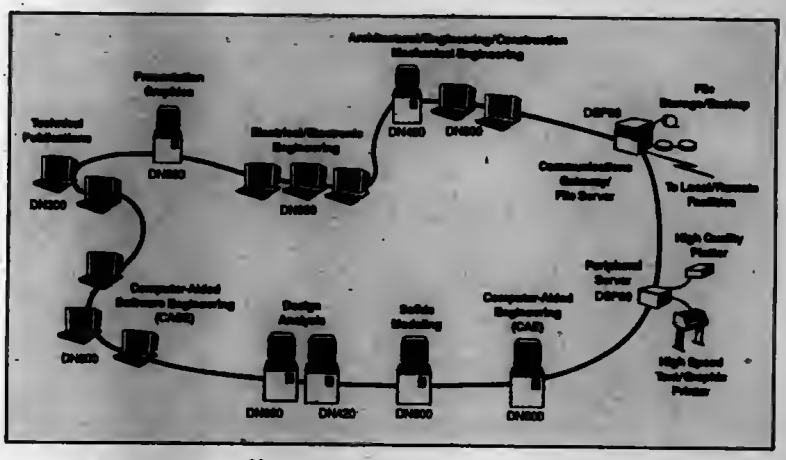

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Bits & Pieces

Model-ISO-11 Isolator Protects Against Crashes

NATICK, Mass. — Electronics Specialists, Inc. has announced Model-ISO-11 Super Isolator to protect software from system crashes, memory loss and various other glitches.

This product features two individually dual-Pi filtered ac socket banks, and spike/surge suppression is incorporated into its design, according to the vendor. Equipment interactions are eliminated; disruptive or damaging line spikes and hash are controlled; and programs operate more smoothly, the vendor claimed.

The Super Isolator is priced at $115.95. The vendor can be reached through P.O. Box 389, Natick, Mass. 01760.

Available Main Memory On FPS Processor Boosted

BEAVERTON, Ore. — Floating Point Systems, Inc. has increased the available main memory on its FPS-164 attached processor from 14.5M to 58M bytes. The FPS-164 is a scientific processor that can be attached to various vendors' systems.

Available in May, users will be able to select from 11 optional main memory sizes ranging from 2M to 58M bytes. The additional memory, the vendor said, will allow users to produce more detailed computer models in structural analysis, oil reservoir simulation and computational physics and chemistry applications.

FPS-164 systems cost from $300,000, the vendor said through P.O. Box 23489, Portland, Ore. 97223.

Companion Package Series Provides Power Standard

LORAIN, Ohio — Lorain Products has announced a line of 150W and 300W switching regulated power supplies for industrial and computer applications.

The Companion power package series, intended for medium-range electronic systems, provides a standardized, switch-mode ac/dc power supply with a range of single or multiple outputs, according to the vendor. The units are convection-cooled to provide regulated power with a minimum 70% efficiency rate, the vendor added.

Prices for the Companion series start at $315. More information can be obtained from the vendor at 1122 F St., Lorain, Ohio 44052.

Plotter Controller Interface Targets IBM 360, 370 Users

ANAHEIM, Calif. — California Computer Products, Inc. has introduced two plotter controller interfaces that reportedly enable IBM 360 and 370 users to utilize any Calcomp plotter.

The Hasp and the Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) are single-printed circuit boards that mount in either the 951 or 953 vector-to-raster controllers. The Hasp emulates an IBM 360 or 370 Hasp remote job entry (RJE) workstation, while the SNA/SDLC emulates the IBM 3776 Models 3 and 4 and IBM's 3777 Model 3 RJE workstations, the vendor said.

Pricing on the interfaces ranges from $3,500 to $5,000. Calcomp is based at 2411 W. La Palma Ave., Anaheim, Calif. 92801.

Adapter Upgrades SMC-70 To True 16-Bit System

NEW YORK — Sony Corp. of America has developed a 16-bit adapter that upgrades its SMC-70 microcomputer to a true 16-bit system.

Called the 16-bit Supercharger, the device reportedly converts the SMC-70's 8-bit architecture to a true 16-bit architecture. The vendor said the enhancement includes a standard 256K bytes of on-board memory that can be enhanced to 768K bytes.

The Supercharger employs Intel Corp.'s 8086 microprocessor and can concurrently support Digital Research, Inc.'s CP/M and Microsoft Inc.'s MS-DOS operating systems, the vendor said.

The Supercharger costs about $1,000, according to the vendor at 9 W. 57th St., New York, N.Y. 10019.

Check Signer/Imprinter Unveiled by Tab Products

PALO ALTO, Calif. — A check imprinter for 11-in. continuous form letters, 11-in. voucher checks, purchase orders, mail promotion items and 3½-in. checks has been introduced here by Tab Products Co.

The Model 2434 Check Signer/Imprinter runs at speeds up to 100 feet/min. and offers a counter that can reportedly be reset, a tractor fee for printing registration, a start/stop/jog switch, a pilot light that indicates when the machine is on and an on/off power control key. A final form stop switch stops the machine when the check runs through and makes it possible for the machine to run unattended, the vendor said.

Prices start a $1,300 for the Model 2434. Further details are available from Tab at 2690 Hanover St., Palo Alto, Calif. 94304.

CPP Upgrades Mini-Rups For IBM 3081, Amdahl CPU

GARDENA, Calif. — Computer Power Products has upgraded the Mini-Rups rotary uninterruptible power system to the Mini-Rups 415, designed for use with IBM's System 3081 and Amdahl Corp.'s 580 415 H mainframe.

This system combines inertia ride-through for momentary outages and battery backup for blackout in a computer-grade motor generator set, according to the vendor. The product has no air conditioning requirement and features 100,000-hour mean time between failures, according to the vendor.

The Mini-Rups 415 is available in the range of 12 to 50 kVA, with prices beginning at $28,000.

Further details are available from Computer Power Products, located at 227 E. Compton Blvd., Gardena, Calif. 90248.

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Bits and Pieces

Turnkey System Released, Based on HP 250/Model 20

FOREST HILL, Md. — Maryland Computer Services, Inc. has announced a turnkey computer system for forms distributors.

Called the FMS 250, the system is based on a Hewlett-Packard Co. HP 250/Model 20 minicomputer and features a forms management system to requisition, procure, warehouse, distribute and inventory client forms. The system generates all documents necessary for warehouse control and produces financial and management reports, the vendor said.

The system costs $34,500 from the vendor at 2010 Rock Spring Road, Forest Hill, Md. 21050.

Percom Data Publication Released for Micro Users

DALLAS — "Inside Personal Computer Disk Storage Systems" is the name of a recently published booklet from Percom Data Corp.

The publication is intended for those users who want more in-depth knowledge about the operation of a microcomputer system. It reportedly examines, in nontechnical terms, both floppy and hard disk micro storage systems as well as controllers and operating systems.

Cost of the booklet is $5. Percom is located at 11220 Pagemill Road, Dallas, Texas 75243.

Comark Disktor M-2 Debuts, 16-Bit, 128K-Byte Micro

WALTHAM, Mass. — Comark Corp. has announced the Diskstor M-2, a microcomputer system based on the Intel Corp. 8086 16-bit microprocessor.

The Diskstor M-2 includes 128K bytes of main memory, serial and parallel interface ports and dual double-sided floppy disk drives. The unit is compatible with Intel's Multibus and includes an 8-slot Multibus card cage, the vendor said.

The Diskstor M-2 costs $8,590, according to the vendor at 257 Crescent St., Waltham, Mass. 02154.

RAM Extender Introduced For Apple II's Appli-Card

SAN DIEGO — Personal Computer Products, Inc. has announced a 128K-byte random-access memory extender for its Appli-Card expansion interface port for Apple Computer, Inc. Apple II microcomputers.

Appli-Card incorporates a board-level Zilog, Inc. Z80 microprocessor and can operate as a stand-alone processor or simultaneously with a Commodore Business Machine, Inc. 6502 processor, the vendor said.

The Appli-Card costs $295. The 128K-byte extender costs $495 and a 64K-byte extender costs $395. The vendor is located at 16776 Bernardo Center Drive, San Diego, Calif. 92128.

Memory Cache Out for Users Of Centennial Subsystem

ROCKVILLE, Md. — Centennial Computer Products, Inc. has announced Smart Cache, a heuristic cache memory for the firm's disk subsystems that are compatible with Sperry Univac 1100 series processors.

Smart Cache is high-speed semiconductor memory that resides in a Centennial dual controller. The memory is supported by the Univac 5046/5056 disk handler and Univac operating systems, the vendor maintained.

Centennial's disk subsystems cost from $209,000 for a four 675M-byte drive subsystem with 2M bytes of Smart Cache, according to Centennial Computer Products at 6100 Executive Blvd., Rockville, Md. 20852.

Monopowerpac Features Power Add-On Capability

RICHMOND, Va. — Power Systems & Controls, Inc. has announced a power supply product that offers power conditioning and distribution and an uninterrupted power supply add-on capability in a noise-controlled module.

The Monopowerpac features the vendor's cycle-on-line circuitry and an automatic bypass to prevent interruption of computer operations. A microprocessor panel with digital readout, LED alarm indicators and power flow mimic are also standard features, the vendor said.

Pricing on the Monopowerpac ranges from $25,500 to $33,500, depending on requirements. More information is available from 3206 Lanvale Ave., Richmond, Va. 23230.

Bunker Ramo Micro Runs On Unix, Targets Banks

TRUMBULL, Conn — Bunker Ramo Information Systems has announced a microcomputer system that helps retail branches of banks manage increasing numbers of financial services.

The Aladdin 30 System reportedly addresses an unlimited number of bank applications. The machine is designed around the Motorola, Inc. MC68000 microprocessor chip, and it runs under Bell Laboratories' Unix operating system.

It also features built-in word processing capabilities, as well as teller-transaction software that enables the system to process all types of regular customer transactions.

Prices for the Aladdin 30 series start at $23,000. Further details are available from the vendor at 35 Nutmeg Drive, Trumbull, Conn. 06609.

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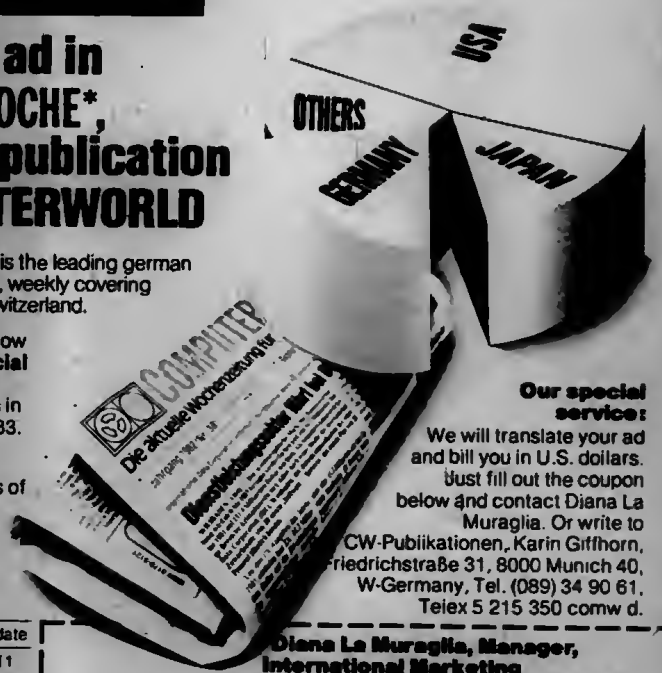

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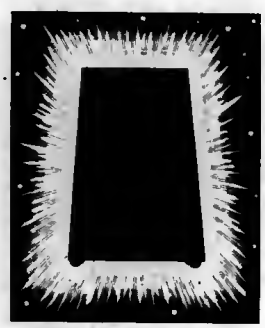

If you decided to buy a computer system before 11 A.M., March 2nd, it was possible to make a purchase decision without fully considering Data General.

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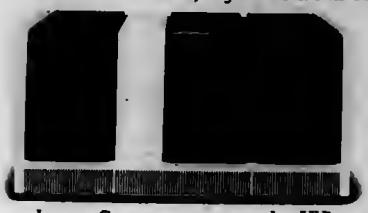

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For additional information contact Don McDougall, Director, Technical Products, M.S. F134, Data General Corporation, 4400 Computer Drive, Westboro, MA (617) 366-8911.

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*Sources include trade press articles, Digital literature, industry reporting publications and data supplied by industry reporting services

Memory, Error-Correction Out for MAI System 810

TUSTIN, Calif. — The Basic Four Information Systems Division of Management Assistance, Inc. (MAI) has announced a memory expansion and parity error-correction chip options for its System 810 computer.

The memory expansion reportedly doubles the 810's storage capacity from 2M bytes to 4M bytes with the aid of 64K bytes of random-access memory. The error-correction code chip, priced at $500 per S12K bytes, offers increased reliability and reduced downtime in case of memory board failures.

The 810 with expanded memory starts at approximately $117,000 and the parity chip is available for approximately $5,000. The vendor is at 14101 Myford Road, Tustin, Calif. 92680.

Subsystems Released for Micros

VIENNA, Va. — PH-Associates, Inc. has announced the Mark-20, Mark-33 and Mark-46 disk subsystems for a variety of microcomputers.

Available in 20M-, 33M- and 46M-byte configurations, the units feature a 30 msec access speed, a 5M bit/sec disk transfer rate and interfaces for a variety of microcomputers including IBM's Personal Computer and Apple Computer, Inc. processors, the vendor said.

Disk subsystems cost from $3,000, the vendor said from 8720 Old Courthouse Road, Vienna, Va. 22180.

Unitronix Unveils System Based on DEC's PDP-11

SOMERVILLE, N.J. — Unitronix Corp. has announced the System 2000, a computer system based around the Digital Equipment Corp. PDP-11 processor.

The System 2000 features 256K bytes of main memory, 160M bytes of Winchester disk storage, a standard 45 in./sec, nine-track tape drive, a DEC VT100 CRT terminal and a DEC LA120 printer. The system can be expanded to 4M bytes of main memory.

System 200 is compatible with DEC's RSTS/E, RSXIIM, TSX and Bell Laboratories' Unix operating systems and is priced from $32,000, the vendor said from 197 Meister Ave., Somerville, N.J. 08876.

System Out For Drafting

AUSTIN, Texas — Bausch & Lomb, Inc. has announced a multiple-station system as the latest addition to its family of electronic drafting systems.

Capable of supporting up to six drafters, the Multistation Producer features a host computer, alphanumeric screen, plotter and two interactive workstations, as well as all software necessary for system operation.

The above configuration is priced at $79,900 and additional stations can be added at $24,900 each. The vendor is at 1212 E. Anderson Lane, Austin, Texas 78752.

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Univac's Sperrylink Gets Voice Processing

Sperry Univac VIP

BLUE BELL, Pa. — Sperry Univac has jumped on the voice store-and-forward bandwagon with the introduction of voice processing for Sperrylink — the mainframe manufacturer's four-month-old entrant into the office automation market, which is designed to integrate such office functions as word processing, data processing and personal computing.

The Voice Information Processing Station (VIP) is a computer-based 24-hour message center that allows voice messages to be stored and forwarded. The system digitally accepts, records and stores speech in the sender's voice. A Touch-Tone telephone allows the user to store a message on disk. Nonsystem users can call in and leave messages on the system for users.

The system can be used as a stand-alone system or as part of the Sperrylink system, a vendor apokesman said. When installed as a component of the office system, VIP becomes part of an integrated system by providing a visual notice on a desk station when voice mail is received, a vendor spokesman said.

Capable of handling from two to 12 telephone channels and servicing from 200 to 1,000 users, the VIP station is designed to work in conjunction with any private branch exchange (PBX) and a telephone company central office system, according to the vendor.

In operation, registered users enter an identity number and password into the VIP atation. They are recognized by name and given a display of the number of new messages. Users can then use any of the four major functions of the station:

• Incoming Messages. The user receives a summary list of messages consisting of the name of the originator or forwarder and a sequential, numeric indicator for each message. After listening to the message, the station provides instructions for replying, forwarding or saving the message and for selecting another.

• Creating Messages. Messages can be recorded and sent to individual users and distribution lists. Basic editing functions such as stop/start, skip and delete are

(Continued on Page 86)

Rapicom 3100, 3300 Get CCITT Compatibility

FAIRFIELD, N.J. — Rapicom, Inc. has announced CCITT Group 1 and Group 2 compatibility and a Programmable Autodialer for the firm's Models 3100 and 3300 desktop digital facsimile transceivers.

The CCITT Group 1 and Group 2 option permits automatic interface with slower speed analog facsimile machines.

The Autodialer serves as a memory telephone with apeed dialing and as a controller for unattended transmission/polling functions.

Base price for the 3100 is $4,600, and the 3300 is $5,000. Group 1 and Group 2 compatibility costs an additional $800; Group 2 compatibility alone costs $450, and the Autodialer costs $900. All products are available on a rental basis as well, a spokesman said from 7 Kingsbridge Road, Fairfield, N.J. 07006.

Workstation Line Targets 3278 Unit

SCOTTSDALE, Ariz. — Phaze Information Machines Corp. has introduced a line of multifunction workstations said to be plug-compatible replacements for the IBM 3278 Model 2 terminal. They also reportedly perform the local processing tasks of the IBM Personal Computer.

The Phaze P9010 information system can perform word processing, spreadsheet planning and can access IBM mainframes through an IBM 3274- or 3276-type coaxial cable port. It can also communicate through an integral serial communications interface and an external modem, the vendor said.

Along with the P9010, the vendor has also introduced the P9002 Information Processing Facility, an upgrade kit that can give the Phaze P3278 Display Station the functional capabilities of the P9010. The upgrade kit can also be used for an IBM 3278 Model 2 terminal to become part of a workstation with the capabilities of the P9010.

The P9010 is available for $4,990, and the P9002 is priced at $3,195. Both products will be available in April from Phaze Information Machines, Suite D7, 7650 E. Redfield Road, Scottsdale, Ariz. 85260.

Turnkey Out For Graphics

MINNETONKA, Minn. — Digigraphic Systems Corp. has introduced a graphics communications turnkey system said to combine data analysis, color graphics and business analysis and forecasting.

Graphcom uses the vendor's Execuvision software and Graphcom Executive Information Station (EIS) based on Digital Research, Inc.'s CP/M operating system. EIS also features a 13-in. color monitor, keyboard, floppy disk, multiple hard disk options and a 300- to 1,200 bit/sec autodial modem. In its basic configuration, the system allows automatic chart and graph creation from spreadsheet files that have been entered and stored on the system.

The system is available for $13,500 to $30,000, depending on configuration from the firm at 10273 Yellow Circle Drive, Minnetonka, Minn. 55343.

NET 8-16 Ups Storage Limit

SAN LEANDRO, Calif. — Local-area network software said to allow Compupro Systems, Inc.'s multiuser microcomputer system users to increase the maximum number of active workstations and their storage capacity has been announced by Gifford Computer Systems, Inc.

NET 8-16 is designed for linking Digital Research, Inc. MP/M-86- or MP/M 8-16-based Compupro System 816 computers, while supporting simultaneous 8- and 16-bit program operation. Previously, only single-user workstations could support CP/M applications programs within a local-area network, according to the vendor.

Base price for the software is $1,995 from the vendor at 1922 Republic Ave., San Leandro, Calif. 94577.

Text Editor Unveiled By 3M Corp.

ST. PAUL, Minn. — 3M Corp.'s Office Equipment Division has introduced a text editor said to combine the features of an electronic typewriter, double-density floppy diskettes and a CRT screen 25 lines deep by 80 char. wide.

The 900 Text Editor uses a modified version of the 3M basic typewriter, the Model 200, and may be used alone or connected to the CRT-processor-disk drive unit. The modular unit can be moved from one work area to another to connect to different Model 200s, a vendor spokesman said.

An additional key pad on the Model 200 provides cursor control keys and single-function keys. Text editing capabilities include decimal tab, automatic column layout, automatic underline, double underline and boldface. Other features include search and replace, block delete, forms fill-in, stop codes for form letters and paragraph adjustment after correction.

The Model 200 with interface is available for $1,699 and the modular unit Text Editor for $3,495. Together, they cost $4,995. 3M can be reached at Department OF83-5, P.O. Box 33600, St. Paul, Minn. 55133.

3M Corp. 900 Text Editor

Racal Telesystems Unveils Protocol Translators

CHICAGO — Racal Telesystems, Inc. has introduced three models of protocol translators said to permit normally incompatible word processing systems to communicate with each other. Seventeen word processing systems can use the translators, including systems from IBM, Digital Equipment Corp. and NBI, Inc.

The Model 101 provides protocol translation for dedicated communications between two word processors. Multiple word processing systems can communicate with each other using the Model 202. The Model 404 allows different word processing systems to communicate with a central word processing system.

Racal Telesystems' Protocol Translator

The Model 101 is available for $3,995, the Model 202 for $3,195 and the Model 404 for $4,995 from Racal-Telesystems, Inc., 410 N. Michigan Ave., Chicago, Ill. 60611.

Burroughs Users Offered Electronic Mail Program

CONCORDVILLE, Pa. — An electronic mail program for Burroughs Corp. large systems users has been unveiled by Mentor Consultants, Inc.

Mentor/Mail reportedly allows updating of prices, data and products; contact by executives to their home offices in hard copy from any telephone, including booths and radio telephones) and the ability to send over 100 documents at one time.

The software runs under Burroughs' Cande command and edit language. The package maintains a data base of messages and a directory of users. The base price is $4,995 from the vendor through P.O. Box 489, Concordville, Pa. 19331.

Courses Out On CEO, AOS

WESTBORO, Mass. — Data General Corp.'s Educational Services has announced the availability of two self-study courses designed for users of the DG CEO and AOS and AOS/VS operating systems.

The "CEO Word Processing" self-study course teaches the user how to enter and manipulate text, use advanced editing functions and create different text formats. The "AOS, AOS/VS Operator" course is designed for users responsible for daily systems operation.

The CEO course is available for $350, and the AOS or AOS/VS course for $695 from DG's Educational Services, MS F019, 4400 Computer Drive, Westboro, Mass. 01580.

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The issue date for the *Computerworld Buyer's Guide to Computer Systems* is August 3. Advertising space close is June 17. Watch for the additional guides from *Computerworld* in 1983: *Terminals & Peripherals and Software.*

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Easy Text WP Package Fits IBM System/34

ROCKPORT, Mass. — Para Research, Inc. has announced a word processing package for the IBM System/34 called Easy Text.

The package is intended to create page designs compatible with most printers, tabulate up to seven columns of text or data (double that for long-line entry), create lines or formats up to 132 columns wide, move or copy paragraphs within a document, include paragraphs or lines from other documents, append paragraphs, underscore, emphasize words using boldface or double-striking and force hyphenation.

Designed specifically for non-technical office workers, Easy Text is priced at $750 from Para Research, Whistlestop Mall, Rockport, Mass. 01966.

PE Program Unveiled for Tads

NORWALK, Conn. — Perkin-Elmer Corp. has released a software program called Pecowriter for its Thermal Analysis Data Station (Tads). Pecowriter reportedly converts Tads into a fully functional word processing system, allowing entry and storage of text on disk as well as text manipulation and editing in a conversational format.

In addition, PE is offering several general software programs for Tads, including Data Management Software-200 (DMS-200) for data and sample management; Intelligent Communications Software program for two-way intelligent communications; and a Basic software program.

Prices are $450 for Pecowriter, $950 for DMS-200, $570 for Intelligent Commnications Software and $680 for the Basic program, from the vendor at Mail Station 12, Main Ave., Norwalk, Conn. 06856.

WP, Communications Aids

Softest Offers OA Packages

RIDGEWOOD, N.J. — Softest, Inc. has introduced two office automation software products — a word processing package and a communications package.

Lex is a WP package said to include documentation preparation; a spelling dictionary of more than 100,000 words; a mass mailing system with a data base; and a built-in, four-function calculator. Lex will run on systems based on Motorola, Inc. 68000s, Intel Corp. 8086s and Perkin-Elmer Corp. 3200 systems. It costs between $650 and $950 depending on the number of users.

Sofgram, an electronic communications manager, is said to guide the user through message creation and transmission via Telex, TWX and direct-dial networks as well as intra-computer electronic mail. The package is available for Bell Laboratories' Unix-based systems and costs $500.

More information is available from Softest, 555 Goffle Road, Ridgewood, N.J. 07450.

Sperrylink Gets Message Center

(Continued from Page 83)

available while recording.

• Outgoing Message Status. This function provides a summary listing of each message the user has sent and its delivery status. By entering codes, the station provides the time a message is delivered, plays back the message and offers options to delete messages.

• Personalizing Service. This function allows each user to create and change up to 10 distribution lists with up to 100 names, user passwords, telephone numbers and information such as where the user may be reached.

The VIP Station consists of a UTS 10 display terminal, a Model 0797 tabletop printer, a Model F2834 disk drive with a maximum capacity of four drives — each capable of storing 100M bytes of data and a Model 8406 diskette subsystem.

The VIP Station will be available in July for $126,000 to $210,000, including software. More information is available from Sperry Univac, P.O. Box 500, Blue Bell, Pa. 19424.

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Industrial Policies Of Japan Probed In Commerce Study

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The U.S. Commerce Department has reported that a study of Japanese industrial policies does not support the view that U.S. computer and other high-technology industries face overwhelming competition from a Japanese industry marching in lockstep to government orders.

"A brief description of the array of Japanese [industrial] policy instruments gives the illusion of a more monolithic system than actually exists," the Commerce Department said in a new report on Japanese industrial policies and their relation to the development of that country's computer and aircraft industries.

This is not to say that policymaking and implementation efforts have not been successful already in protecting and promoting the Japanese computer, semiconductor and electronics industries.

On the contrary, the report said that through government direction, extremely favorable financing mechanisms, government-orchestrated joint research and development projects and a buy-Japan policy that Japan's computer industry has all but caught up with its American counterparts,

(Continued on Page 94)

State Tax Authorities Look To Software for Revenue

By Lois Paul
CW Staff

As a result of cutbacks in federal aid, some state tax authorities are looking to software as a future source of sales tax revenue.

This seems to be the case with bills pending in Massachusetts and North Carolina that essentially are attempting to redefine tangible personal property to include computer programs.

'The 14th Amendment is supposed to protect us against arbitrary government action . . . I maintain it is unreasonable and irrational and a violation of the 14th Amendment to call an intangible tangible.'

— Robert Sherin
DPMA Legislative Adviser

In Massachusetts, House Bill 2239 is intended to amend the definition of "tangible personal property" to include any computer program, whether it is a systems or application program, machine-readable or human-readable, prewritten or custom-designed.

House Bill 327 in North Carolina, which was scheduled for a third reading in the House of Representatives last week, is an act to include certain computer programs in the definition of tangible personal property under the sales and use tax provisions. This will include "prewritten computer programs, either in the form of written procedures or in the form of storage media," but will not include "the design, development, writing, translation, fabrication, lease, license to use or consume or transfer for a consideration of title or possession of a custom computer program," according to the text of the bill.

A public hearing regarding Massachusetts House Bill 2239 will be held on April 6 at the State House in Boston. At the same time, Senate Bill 1693 will be addressed. According to its author and co-sponsor, Robert Bigelow, attorney and editor of the *Computer Law & Tax Report*, Senate Bill 1693 is the opposite of House Bill 2239 and calls for an exemption of customized computer programs from sales tax, similar to the law to this effect that was passed in California last year. [CW, Oct. 11].

"That you are seeing such legislation doesn't surprise me. With the cutbacks to

(Continued on Page 92)

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Chief Executive Officer	63%	71%	17%	50%	28%	6%
Chief Operating Officer	37	10	-	89	33	6
Executive Vice President	64	9	18	55	45	8
Chief Financial Officer	37	3	3	54	23	3
Administrative Vice President	40	-	11	56	22	2
Chief Marketing and Sales Executive	50	8	-	33	25	8
Chief Human Resources Executive	40	-	7	53	33	7
Chief Engineering Executive	22	4	-	26	22	-
Chief Manufacturing Executive	23	4	-	38	27	4
Chief Products Development Executive	40	-	-	50	20	-

Source: Peat, Marwick, Mitchell

Most Frequently Offered Perquisites to New England High-Tech Executives.

New England Beats Sun Belt In Salary Survey

By Tom Henkel
CW Staff

BOSTON — New England high-technology firms appear to be countering the "sun and fun" lures of Sun Belt competitors with cold cash.

According to a recent survey of top executives in New England high-technology companies, pay increases in the Northeast rank about 4% higher than similar firms in the Southern states and on the West Coast. Conducted by Peat, Marwick, Mitchell & Co., the survey revealed New England high-tech executives received an average 13.9% pay increase in 1982. That compares

(Continued on Page 96)

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Fujitsu to Buy TRW's Share in TFC Partnership

LOS ANGELES — Fujitsu Ltd. and TRW, Inc. have broken their three-year partnership in TRW-Fujitsu Co. (TFC). Both companies admit the joint venture did not work.

Fujitsu announced recently it will buy TRW's 49% control of TFC and continue to market the current 7880 line of point-of-sale terminals, the 8500 line of small business systems and Micro16 desktop microcomputers. Industry watchers have also speculated Fujitsu may use TFC as a springboard for independently marketing low-end mainframe processors. Fujitsu currently supplies processors for Amdahl Corp.'s IBM-compatible processor business.

While Fujitsu held the majority interest in TFC, TRW officials in the U.S. managed the firm. Fujitsu, however, was responsible for product development and integrating its products into the U.S. marketplace.

A TRW spokesman said TFC's biggest problem was its inability to communicate U.S. customers' needs to product developers in Japan. Some industry watchers added that cultural differences between the U.S. marketing and Japanese development operations caused friction within TFC. In any case, TRW said that the joint venture failed to produce a profit in its three-year stint.

TRW is expected to sell its interest in TFC, for an undisclosed amount, by the end of March. TRW will, however, allow three of its executives to remain as advisors, and TRW will continue to provide U.S. service for TFC products.

A TRW spokesman said Fujitsu is likely to change TFC's name after the sale is completed.

TFC is expected to maintain its Los Angeles offices and 375-employee staff.

AMI Lawsuit Charges IMP With Unfair Competition

By Patricia Keefe
CW Staff

SAN JOSE, Calif. — American Microsystems, Inc. (AMI) last month filed suit in Superior Court here against International Microelectronic Products (IMP), charging the firm with unfair competition, pirating employees and stealing trade secrets concerning AMI's buried diffusion process and computer-assisted design (CAD) software. No trial date has been set.

A subsidiary of Gould, Inc., AMI is seeking $1 million in actual damages and $10 million in punitive damages, as well as asking the court to impose a "constructive trust," whereby IMP would have to pay AMI any profits gained through the alleged use of AMI trade secrets.

AMI has charged that, in 1981,

'AMI is following a trend among larger companies to sue new ventures in order to "stifle the entrepreneurial spirit" while tying up the start-up's resources in defending the suit.'

— George Gray, former AMI employee

IMP "promptly began a practice, which continues unabated, of staffing IMP with key engineers, executives and employees from AMI ... most of whom were intimately involved in the development of the buried diffusion process in AMI's technical research and development department or in the use or development of AMI's CAD software."

More specifically, AMI claims that a 64K-byte read-only memory (released in 1982) and the Impel Design System (released in January) developed by IMP are manufactured by making unlawful use of AMI's buried diffusion process and CAD software, which are alleged to have been "wrongfully transferred" to IMP by former AMI employees. AMI officials have refused to comment on the suit.

IMP is a two-year-old semiconductor manufacturer founded in January 1981 by two former AMI employees, George Gray and Zvi Grinfas.

In a release denying those allegations, Gray, now IMP's chairman, said the AMI lawsuit was "totally unjustified" and accused AMI of following what he calls a trend among larger companies to sue new ventures to "stifle the entrepreneurial spirit" while tying up the start-up's resources in defending the suit.

IMP officials dispute AMI's claim of having developed the theory of the buried diffusion process, claiming there is nothing new about the concept. Gray pointed to firms such as Texas Instruments, Inc., Rockwell International Corp. and Advanced Micro Devices, Inc. as examples of companies said to be either studying the concept or manufacturing products utilizing the technology.

Gray said that, of 136 staffers hired over the last 12 months, only 10 were from AMI.

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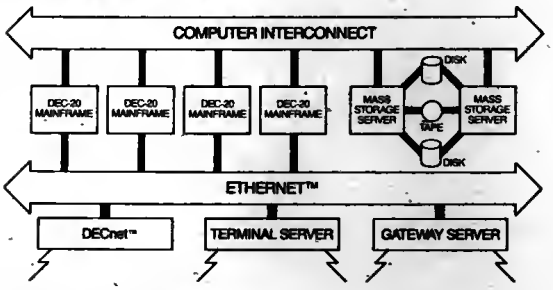

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Preliminary Ban Issued on Hubco MAI Upgrade

BOISE, Idaho — A Federal District Court judge here has granted a preliminary injunction stopping Hubco Data Products Corp. from selling software modifications for minicomputers manufactured by the Basic Four Information Systems Division of Management Assistance, Inc. (MAI).

In a long-running court battle [CW, July 19, 1982 and Nov. 15, 1982], MAI has charged Hubco with violating its software copyrights by selling a series of memory upgrade packages for Basic Four minicomputers.

The upgrades, according to a spokesman for MAI, make illegal modifications to the Basic Four Boss operating system and also to some of its Basic Business software.

Hubco maintains its enhancements do not make illegal changes to Boss.

The company also claims that Basic Four Business Basic packages are in the public domain and has charged MAI with violating federal antitrust laws by trying to stop Hubco's sales.

Pending the results of a scheduled May 9 hearing, Hubco is restricted from selling memory upgrades for Basic Four systems, according to Hubco President Tom Haycock.

The court's decision follows an earlier court ruling denying Hubco a preliminary injunction against MAI.

Mass., N.C. Bills Attempt to Tax Software

(Continued from Page 87)

federal aid to the states, a lot of states are in severe financial difficulty and they are looking to widen their revenue base," according to Ron Palenski, assistant general counsel for the Association of Data Processing Service Organizations, Inc.

Palenski said it is interesting that a state like Massachusetts feels the necessity to introduce legislation when it already has a regulation that calls for the taxation of software [CW, March 20, 1981]. He explained, however, that if the legislature enacts a statute that defines computer software as tangible, this would be more difficult to test than a regulation. "The only challenge you can make to that is that it violates the state constitution," he said.

Steve Vajda, chairman of the taxation task force for the Commission on Software Issues in the '80s, described the pending bills as part of "the backlash effect based upon prior decisions where software was ruled to be intangible and, therefore, not taxable. Rather than trying to put in a reasonable distinction between the kinds of software they are looking at, they are just saying software should be taxable."

Vajda admitted that the amounts of money that would be charged per company are not large, but "the problem is the precedent has been set, and it will be set all of the time unless it is contested." Citing the Data Processing Management Association's (DPMA) opposition to the matter, Vajda said this organization is "not opposed to taxation if it's reasonable and in line with other legislation and regulation. If they want a definition of software that will make sense, we can support the fact that pure copies of software off the shelf could be taxed. Anything dealing with any service applied to it whatsoever, however, should not be taxed. It should be part of the service industry approach."

"The 14th Amendment is supposed to protect us against arbitrary government action . . . I maintain it is unreasonable and irrational and a violation of the Fourteenth Amendment to call an intangible tangible," asserted Robert Sherin, nonjudicial legislative adviser for DPMA and a long-time opponent of taxation of customized computer programs.

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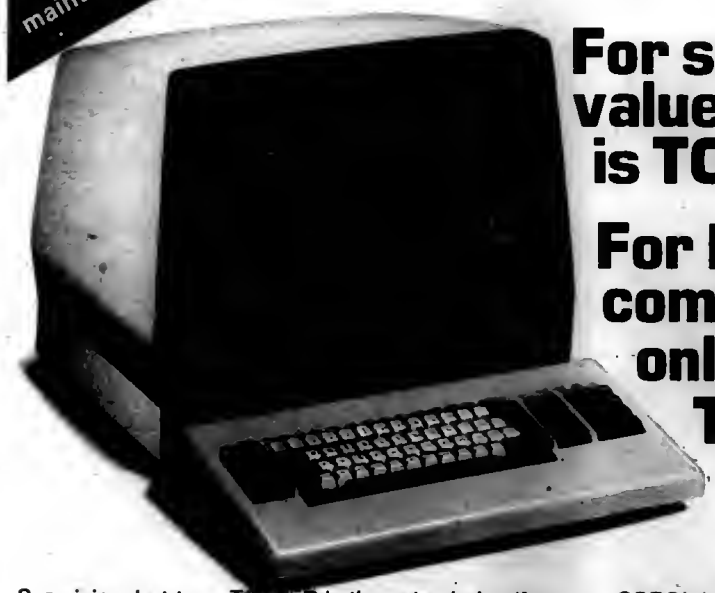

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Japan's Corporate-Government Policy Probed

(Continued from Page 87)
reversed a high-technology trade deficit and positioned the nation to enter a high-technology future.

The Commerce study extensively details the historical, legal and corporate development of Japan's broad computer and electronics industrial policy. Evolving through the last 10 years of government-directed R&D and marketing in this field, that policy now has reached maturity, as indicated in three major Ministry of International Trade and Industry (Miti) projects — the fifth-generation computer, supercomputer and semiconductor development plans — to which more than $700 million have already been committed through 1988-91.

Commerce does not minimize the competitive challenge U.S. firms face because of this policy implementation. But in general, the report indicated, Japan's corporate-government partnership is not the relentless menace American business executives often make it out to be.

Discussing the impediments to successful Japanese industrial policymaking, Commerce concluded: "The system has serious internal problems and external limitations. Several major issues regularly challenge those who design and assemble the various policy packages."

First, the report said, is that "an intense competition often existing between Japanese firms makes them reluctant to participate fully in an industrywide agreement or effort. This is especially true," Commerce said, "for companies that believe they are in a leading position.

This situation can make it particularly difficult to orchestrate interfirm cooperation when it involves sharing basic information, engineering accomplishments or top personnel. Secondly, corporations generally relinquish to the government as little control over their activities as possible — whether it be financial, administrative or substantive."

In addition, Commerce said, "the future effectiveness of Miti development policies will be hindered to the extent that the complex interdependence between Japanese industries, government agencies and other organizations restricts flexibility in meeting new developments.

"Furthermore, reaching an effective consensus on industrial policy will be increasingly complicated by Japan's dependence on foreign natural resources and Japan's international trade and investment relationships," the report said. Although Japan's computer industry is not hindered by natural resource problems, Japanese firms are becoming increasingly entangled in joint R&D and marketing agreements with American firms, which theoretically could lessen their allegiance to government-directed programs.

Finally, Commerce said, "industrial policy formulation faces the risk of incorrect choices — picking the wrong sectors for expansion or construction."

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NTT Unveils Plan for U.S.

NEW YORK — Nippon Telegraph & Telephone (NTT) public corporation of Japan has announced an eight-point initiative designed to speed up American sales in Japan's telecommunications equipment market. The plan will begin immediately, according to an NTT spokesman.

NTT will now accept applications in English and in its New York office and extend application deadlines. It will also improve the flexibility of its product requirements, respond faster to sales possibilities and make simultaneous announcements of product requirements in the U.S. and Japan.

The improvements should increase competition and speed up the contractual process, a U.S. Trade Representative Office official said. It will also lead to greater sales of U.S. telecommunications equipment to NTT, the official said.

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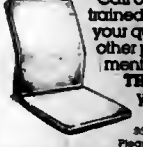

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New England DP Firms Luring Execs With Cold Cash

(Continued from Page 87)

with about a 10.7% increase for Southeast high-tech executives and approximately 9% for executives in California's Silicon Valley, according to Donald T. Sagolla, manager of Peat, Marwick, Mitchell's human resource consulting service.

In addition, New England executives will probably receive larger pay increases in 1983. The survey estimated the average pay increase would be 10.9%, as compared with about 9% in other parts of the country.

For the most part, Sagolla said, New England appears to have escaped the most severe ravages of the recession. Even better news for those in New England is the area may never feel the full pinch of the recession, Sagolla said.

What are New England high-tech firms doing right? Sagolla said there are several factors.

"We're either a lot luckier than most or more proactive," Sagolla said, adding that New England high-tech firms appear to be using salary bonuses and short-term incentive plans more effectively than other geographic areas.

For example, the Peat, Marwick, Mitchell report noted that 82.5% of the companies surveyed said they offered incentive bonus programs to their executives. Of that percentage, 54% said they made bonuses available to all executives, and 42% said only selected executives were eligible for bonuses. Four percent of those polled did not indicate who was eligible for a bonus, according to the report.

The approach appears to work. Sixty-five percent of the firms granting above-average pay increases showed above-average performance, the report noted. In addition, New England firms appear to concentrate more heavily on planning and managing sales growth than on long-range strategic and financial planning.

Ironically, however, the study concluded that relatively few companies in the start-up or growth stages used short-term bonus compensation as a tool to boost productivity. As one participant in the firm's survey noted, "Initially, we intend to conserve cash and provide all employees with a significant equity position. In the future, we will pay necessary salaries to enable us to hire the 'best' people. The stock ownership motivates [the executives] to build a substantial company."

A company car or annual physical exam were the most popular perquisites offered to high-tech executives.

The Peat, Marwick, Mitchell report is free from the firm, which is located at One Boston Place, Boston, Mass. 02108.

Manufacturers Reach Standard Agreement

SANTA BARBARA, Calif. — A group of industry manufacturers reached final agreement on a proposed recording-format standard intended to permit interchange of recorded media for streaming ¼-in. cartridge tape drives.

The proposal, designated QIC-24, was established at a meeting of the Working Group for Quarter-Inch Cartridge Drive Compatibility (QIC). The six QIC members who voted unanimously in favor of QIC-24 are Archive Corp., Cipher Data Products, Inc., Data Electronics; Inc., Qantex Division of North Atlantic Industries, Inc., Tandberg Data A/S and Wangtek.

Further details on the proposed standard may be obtained from Freeman Associates, 311 E. Carrillo St., Santa Barbara, Calif. 93101.

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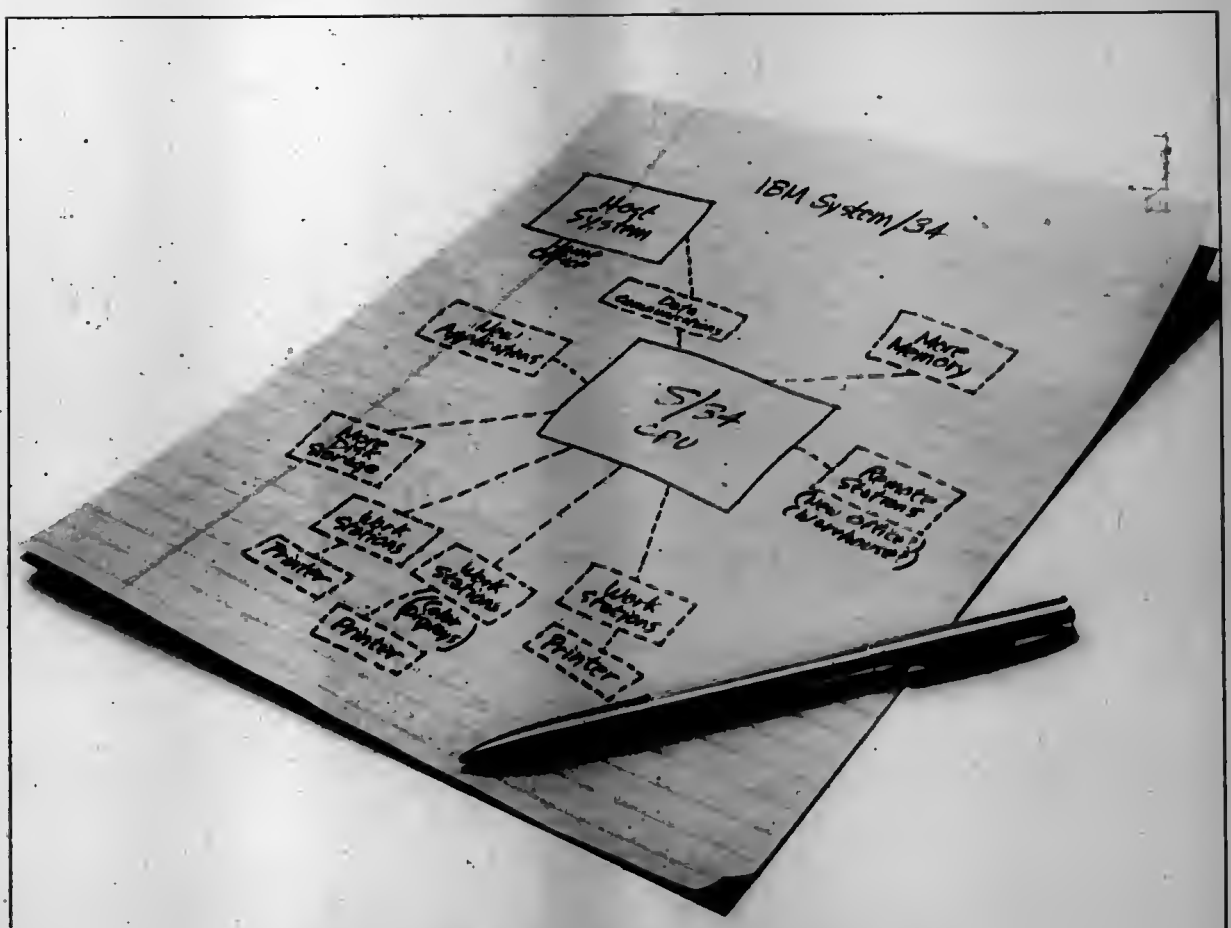

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To Global Alliances, Economic Development

Protectionism to Foster High Tech Seen Threat

By Jake Kirchner
CW Washington Bureau

ROTTERDAM, The Netherlands — The head of the Organization for Economic Cooperation and Development (OECD) warned recently that trade protectionism to foster high-tech industries threatens global alliances and economic development within individual nations.

The efforts of countries to protect their emerging high-tech industries through government support of research and development and through various barriers to trade with competing nations are making the development of high technology "a divisive issue in the trade field," OECD Secretary-General Emile van Lennep said in a March 4 address here to the American-European Community Association.

Noting that high technology is "a sensitive issue in Europe's relations with both the U.S. and Japan," van Lennep said, "The recent intensification of problems related to trade in high-technology products stems from the role governments assign to key technologies and science-based industries in revitalizing their economies and strengthening their overall competitiveness."

Trade Wars

In both the U.S. and the European community, growing protectionist sentiment within national governments threatens to spur trade wars in important trading commodities. Although the protectionism was initially aimed at supporting native agricultural and heavy manufacturing industries, some business executives and government officials fear it could spill over into increasingly important high-tech sectors [CW, Dec. 27/Jan. 3].

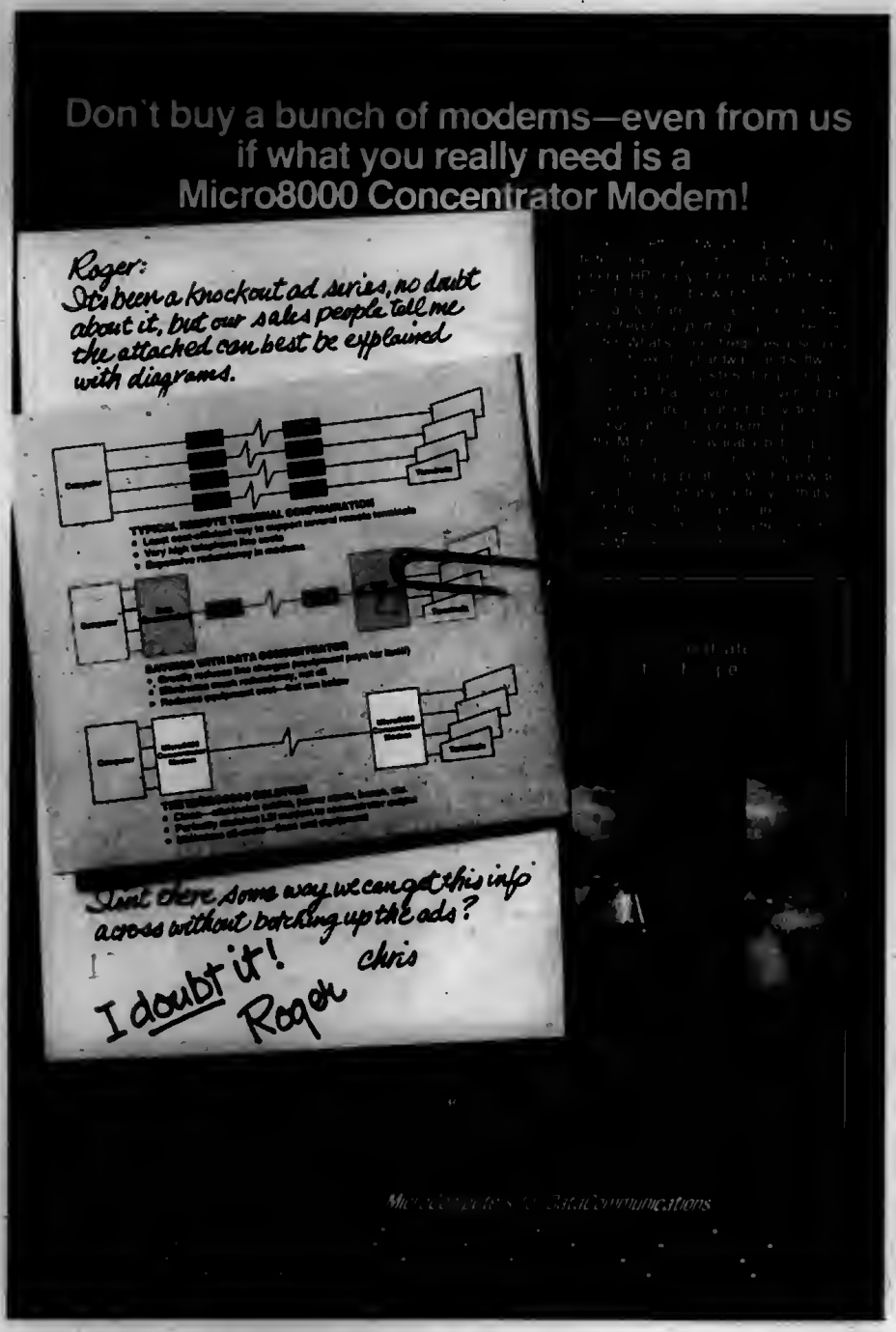
OECD is currently looking into the growing problem of high-tech protectionism and possible solutions. OECD includes 18 European countries and the U.S., Canada, Japan, Australia, New Zealand and Iceland.

Discussing in general what he termed the "new and disquieting momentum" of protectionism throughout the world, van Lennep observed that "protectionism has become a somewhat loaded concept with ample room for misunderstanding. Current policy statements have a tendency to characterize protectionism in terms of actions by other countries and rarely, if ever, by one's own."

While "it is inevitable that the prolonged period of low growth and rising unemployment should have led to an increase in protectionist pressures," van Lennep said "the most telling arguments against protectionism are not only the traditional ones, referring to internationally agreed rules and the danger of retaliation but, more importantly, evidence that protection, particularly in its more subtle forms, is bad for the economy of one's own country.

"Protectionist measures, by locking resources into declining activities, weaken the capacity of adjustment of an economy and make it more inflation-prone," he said.

"In broad terms, protection is always a redistribution of income inside a country and not from one country to another. Almost by definition, the beneficiaries of protection are existing enterprises and activities, at the expense of others that might emerge tomorrow," he said.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BEI Chief Found Guilty Of Theft From Nixdorf

By Patricia Keefe
CW Staff

CAMBRIDGE, Mass. — A used computer sales and scrap company and its president, a former Nixdorf Computer Co. employee, were found guilty recently in Superior Court here of conspiring to steal computer equipment from the Nixdorf Computer Corp.

BEI, Inc. President Arthur S. Greenberg faces a maximum of five years in prison. Both Greenberg and his firm could be fined up to $5,000 as well.

Allan T. Greenberg, Arthur Greenberg's brother and a codefendant, was found not guilty. As BEI treasurer, Allan Greenberg sold used equipment and signed many payoff checks made out to George Zenisek, a former manager of Nixdorf's refurbishing department, the prosecution charged. Zenisek, the prosecution's star witness, was also indicted, but swapped a guilty plea and his testimony for recommendation of a suspended sentence.

Another defendant, Michael McGibbon; a former Nixdorf employee who the prosecution said moonlighted for BEI, is awaiting trial.

Defense attorneys attempted to build a case around what they alleged to be Nixdorf's vague and loose equipment scrapping policies, poor record keeping by prosecution witnesses and improper behavior on the part of Nixdorf officials in helping Massachusetts State Police with the search and seizure of equipment from BEI in August 1981.

About $5 million worth of computer equipment was found at the Computer Corral, BEI's retail site, as a result of those warrants; most of the equipment was manufactured by Nixdorf and at least $1 million of it was thought to be new equipment, according to testimony.

In addition to the criminal case just concluded after 14 days of trial, Nixdorf had also filed an as yet unresolved civil suit in August 1981 against the same three defendants and two other alleged coconspirators: Shirley Greenberg, Arthur's wife and a former Nixdorf employee and her supervisor, Zenisek, who is charged with rigging bids and throwing usable components into the scrap piles. The civil suit charges the defendants conspired to steal computer parts valued between $1.5 million and $7 million.

The civil and criminal charges are the result of a four-month sting operation launched in the spring of 1981 by Nixdorf with the aid of First Security Services Corp. (FSS) of Boston, a private investigation firm. Evidence compiled from warrants executed by Massachusetts State Police also contributed to the charges.

BEI, Inc. is a company that bids on equipment scrap piles and refurbishes used equipment for sale at the Computer Corral and via mail order ads.

Between July 1980 and August 1981, BEI won 35 bids from Nixdorf's refurbishing department. BEI also paid Zenisek about $29,000 for rigging bids and adding, against Nixdorf policy, new and working computer components into scrap piles, according to testimony.

Nixdorf first became aware of irregularities in the refurbishing department at their North Reading, Mass., warehouse in March 1981 after receiving several anonymous telephone calls charging that equipment was being stolen. As a result of those calls, Nixdorf called in FSS to work with the corporation's security force. Armed with what FSS Vice-President Lawrence T. Curran characterized as very detailed information from the anonymous tipster, a subsequent investigation pointed toward BEI and its officers as likely suspects.

At this point, FSS put its sting operation into action. It set up a dummy corporation entitled BC Associates, complete with Nixdorf computer equipment. Investigators posing as company officials then went to the Computer Corral and inquired about the availability of Nixdorf parts.

Sting Method Gaining Favor

BOSTON — Nixdorf Computer Corp. has paid First Security Services Corp. (FSS) of Boston about $70,000 so far to recover stolen computer equipment valued up to $7 million.

FSS Vice-President Lawrence T. Curran said he has investigated several cases of computer theft and is beginning to see changes in the attitude of corporations toward security issues.

"Nixdorf and all the other computer companies that I have dealt with have difficulties in tracking their equipment," Curran said. "You have to understand that the emphasis is on manufacturing and sales operations, not security." But Curran sees this attitude changing as a result of widely publicized cases such as the IBM/Hitachi Ltd./Mitsubishi Electric Corp. trade secret theft.

When theft is suspected, one way of ferreting out suspects is via the "sting," a method of going undercover that has gained popularity.

In the case involving Nixdorf and BEI, Inc., a computer salvage firm (see related story), a dummy corporation was established and supplied with a working Nixdorf system. FSS investigators were trained on the equipment prior to the operation's start-up, according to Curran.

Since Massachusetts law requires consent prior to taping conversations, the FSS team was forced to rely upon videotapes of meetings, written notes and reports following critical meetings with BEI principals and testimony taken from a Nixdorf refurbishing manager.

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HP Group Aims to Increase Business Micro Sales

By Robert Batt
CW West Coast Bureau

SUNNYVALE, Calif. — A significant increase in the sale of business application microcomputers is a major priority for Hewlett-Packard Co.'s recently formed Personal Computer Group, company executives have revealed.

Cyril Yansouni, group general manager, said HP will be developing a more integrated product strategy in an attempt to gain greater penetration of the distributed data processing and business applications market.

"Our aim is to provide more total solutions," Yansouni said. "In the past, we have been primarily a company catering for hardware and data processing tools. Now we are moving to provide more complete software as well. For example, we are opening up our products so that third-party software for our personal computers can be developed."

Because of HP's experience in manufacturing applications, much of its market share to date in personal computers has been in the technical and scientific fields, rather than business applications, Yansouni said. About 70% of HP's personal computer sales are estimated to be in the hands of technical and scientific users, the remainder in business applications. The HP 120 desktop computer and the HP 75 portable system will be the leaders in HP's more aggressive marketing in business computing, company officials said.

In expanding sales of personal computers for business applications, Yansouni argued it was important to sell direct to both management information systems directors and end users. "You need a good distribution strategy to be successful. You have to create an awareness of your product not just in the company's data processing department, but also with the individual end user. The end user thinks both as a company professional and as a consumer. You need to appeal to both," he said.

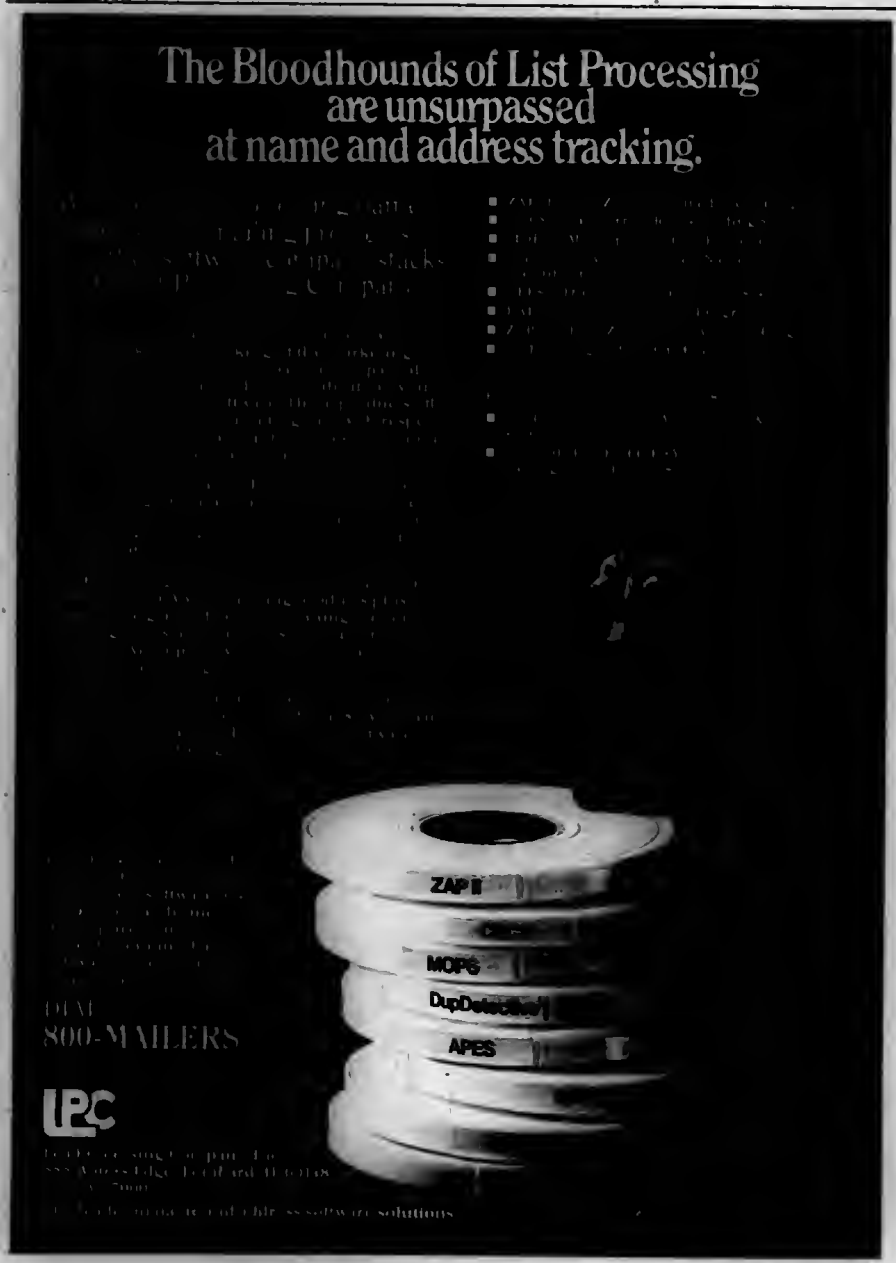
According to Richard Love, HP's newly appointed manager of manufacturing operations for the Personal Computer Group, HP intends to build an integrated distribution system that will allow delivery of all components of an executive workstation to the end user in one package.

Currently different manufacturing plants are responsible for delivering separate peripheral equipment such as printers, plotters or software manuals, and, Love said, users have complained that such a distribution system does not satisfy their needs.

"Our aim is to appear to the end user as one company, not as eight different divisons. We want it to be transparent to the user where we invent or build something connected with a personal computer," he explained.

On another subject, Yansouni said industry standards are becoming increasingly important regarding personal computers because users are demanding them. In this sense, IBM's role in the personal computer sector has been significant due to the variety of third-party software available for use on its personal computer.

"In looking at the question of standards you have to recognize that personal computers are information tools. Therefore, what you really need is communications standards, not just in data, but also in voice, text and images. Anything that helps to standardize all those elements will significantly strengthen the growth of the personal computer market," he added.



EDP News Restructuring DP Publications

ANNANDALE, Va. — EDP News Services Inc., 25-year-old publisher of computer industry newsletters, is putting the finishing touches on a major restructuring of its publications.

Published under the *Computer Age* banner, the firm's newsletters — covering software, peripherals, data communications, mini/microcomputing, electronic funds transfer, world trade, federal computer procurement and computer crime — are now devoted solely to news analysis.

"The goal is to make all the publications original research and analysis, period," Editor Daniel Casolaro said. EDP News is completing arrangements with experts in various DP fields to provide that analysis, he said. The editorial content of "Computer Crime Digest," for example, is under the direction of Jay Bloombecker, executive director of the National Center for Computer Crime Data, Los Angeles.

General DP industry news is available through the firm's "Computer Daily" newsletter and a news roundup publication, "EDP Weekly," which has been in existence since 1960. The company is also considering on-line publishing, Casolaro said.

The firm is offering package discounts for subscribers to multiple newsletters. Subscriptions to the analysis publications range from $98 to $150 a year. EDP News Services, Inc. is at 7620 Little River Turnpike, Annandale, Va. 22003.

Wants IDX Sale Prohibited

Rolm Files $100 Million Lawsuit Against Plessey

SAN FRANCISCO — Rolm Corp. has greeted the unveiling of Plessey Telecommunications, Ltd.'s IDX digital private branch exchange with a $100 million lawsuit accusing the British concern of misuse of Rolm technology and copyrighted software in the development of IDX.

More specifically, the suit charges Plessey with unfair competition, breach of contract, misappropriation of trade secrets and copyright infringement.

In the suit filed in U.S. District Court here last month, Rolm is asking the court for relief in three areas, according to spokesman Chris Stanfield:

- An injunction prohibiting Plessey from selling IDX.
- Actual damages resulting from any profits Plessey may have gained through the use of Rolm technology or software or the sale of any product based on that technology.
- Punitive damages of $100 million.

Plessey obtained access to the Rolm technology in question via software agreements executed in 1976 and 1977, which expired Feb. 15, Stanfield alleges. Under that agreement, Plessey had been using Rolm technology to manufacture and market its PDX system, a modified version of Rolm's CBX product. That agreement reportedly required Plessey not to use, disclose to or assist others in using the technology for a period of five years after the dissolution of the agreement. The IDX is said to be a replacement for the PDX.

According to court documents, "The IDX . . . is a derivative product which could not have been designed or developed and cannot be manufactured without the use of Rolm technology and software."

The suit further charges that the IDX is the only exchange other than Rolm's CBX to use a universally available parallel digital bus as a switching element and that is capable of selecting the most cost-effective trunk lines available for long-distance calling. Also, both exchanges use error-correcting random-access memory.

Rolm's charges "are totally without foundation," according to Plessey spokesman Warren Sinsheimer. In a prepared statement, Plessey claimed it has its own digital expertise and applied that knowledge to the in-house development of the IDX. Also, Plessey said the Rolm suit would not interfere with plans to manufacture and market the IDX.

Electronic Business Section At Gould Restructured

ROLLING MEADOWS, Ill. — Gould, Inc. has restructured its Electronic Products business section in line with a recent decentralization move.

The Instruments Division has become two new divisions: Recording Systems and Design and Test Systems. Worldwide product specification and marketing responsibilities for the Design and Test Systems; Recording Systems and Power Conversion divisions have been realigned. Power conversion products have been consolidated within Gould's Power Conversion Division.

In addition, four management appointments have been announced. James E. Forrest has been named president and general manager of the Recording Systems Division, and Patrick J. Tierney has been named president and general manager of the Power Conversion Division. Martin J. Weisberg has been named president and general manager of the Design and Test Systems Division, and Alan C. Mansfield has been appointed vice-president, administration of European operations.

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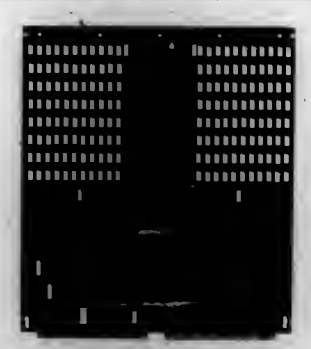

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Forecasts & Findings

Retailer DP Spending Up

Participating retailers spent a total of $271 million on data processing operations and programming during 1981, representing an increase of more than 8% over the previous year, according to the first annual **Survey of Management Information Systems Expenses**, by Arthur Young & Co.

The study further indicates that retailers allocated a total of 22% of the amounts budgeted for management information systems to the development of new computer systems. These figures reflect a trend toward large-scale system implementation, according to the vendor. Retailer interest is seen moving toward integrated systems rather than standalone modules.

The report is free of charge, according to a spokesman from Arthur Young & Co., 277 Park Ave., New York, N.Y. 10172.

Switches Mart Growing

The market for push-button and keyboard switches in Western Europe will each grow 11% per annum through 1987, outpacing other types, according to **The Switches Market in Europe**, by Frost & Sullivan, Inc.

These two categories, along with microswitches, will be largely responsible for keeping the total switch market advancing at an average rate of 5% a year during the forecast period, the report said. The total European market is at $1.8 billion in 1981 and is expected to reach $2.4 billion by '87. In contrast, the markets for rotary and thumbwheel switches are expected to decline. A predicted marginal growth rate for toggle, lever and rocker switches is said to reflect a trend away from all three types to the use of push buttons.

The study, No. E572, costs $1,600 from the vendor, located at 106 Fulton St., New York, N.Y. 10038.

USC to Emerge as Spoiler

United Satellite Communications, Inc. (USC) will probably emerge as "the spoiler" in the U.S. direct broadcast satellite (DBS) service, preempting a largely rural market that had been targeted by Communications Satellite Corp. (Comsat) and other companies, according to **The Video Technologies**, by The Yankee Group.

A USC/General Instrument Corp. (GI) initiative will probably be the catalyst for an industrywide scaling down of DBS from the 200W power level to the 4W to 100W range, which the report said will prevail as a "medium power" industry standard for DBS. The predicted scenario for the DBS market sees early entry by GI/USC in 1983, followed by Comsat, RCA Corp. and perhaps other companies advancing their schedules somewhat to put up with competing systems by 1985 or '86. Programmers adopting DBS as a delivery medium during this time frame may include CBS, NBC and ABC, according to the report.

The report is available to subscribers of the Home of the Future Planning Service, which sells for $11,500. More information is available from The Yankee Group, located at 89 Broad St., 14th Floor, Boston, Mass. 02110.

Services Demand to Grow

The demand for U.S. computer services — including data processing and professional services, software products and turnkey systems — is expected to grow fivefold between now and the mid-1990s, according to **Computer Services**, by Predicasts, Inc.

The report predicts that by 1985, the computer services volume of $36 billion will be 1½ times that of computer hardware and will increase further to 2½ times ($100 billion) by 1995. Data processing's share of the market is expected to shrink from a level of 71% in 1981 to 42% in 1985, while revenue will climb from $9 billion to over $15 billion during the same period. By 1995, DP will account for 33% of the computer services market or $33 billion in volume.

The report, Industry Study No. E74, costs $1,095 from Predicasts, 11001 Cedar Ave., Cleveland, Ohio 44106.

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Nickels & Dimes

Decision Data Computer Corp. has reported a 48% increase in revenues and an 85% increase in net income for the fiscal year that ended Nov. 30, 1982. The company reported revenues of $74,319,000, compared with $50,101,000, and net income of $3,809,000 or 57 cents per share, compared with $2,055,000 or 37 cents per share for the same period in 1981.

$ $ $

Hewlett-Packard Co. has announced a 13% increase in sales and a 16% increase in net earnings for the first quarter of fiscal year 1983, which ended Jan. 31. Sales totaled $1.06 billion, compared with $936 million for the same period of fiscal year 1982. Net earnings amounted to $85 million or 67 cents per share, compared with $73 million or 59 cents per share.

$ $ $

Comdisco, Inc. has announced net earnings of $12,531,000 or 93 cen per share for the first quarter of fisc 1983, which ended Dec. 31, 198 These figures represent increases o 30% and 23%, respectively, over th same period last year snd are th highest quarterly earnings ever r corded by Comdisco, according to company spokesman.

$ $ $

Paradyne Corp. has reported revenues for 1982 of $207,341,000, a 49% increase over 1981 revenues of $139,023,000. Net income in 1982 was up 47% at $26,872,000, compared with $18,261,000 for 1981, and earnings per share increased 33% — from $1.40 per share to $1.86 per share — for the same period.

$ $ $

Cullinet Software, Inc. (formerly Cullinane Database Systems, Inc.) has announced revenues for the three months ending Jan. 31, 1983 increased 62% to $20,905,000, compared with $12,925,000 for the same period last year. Net income for the quarter was $3,025,000, a 51% increase over last year's $2,007,000. Earnings per share, adjusted to reflect a two-for-one stock split, rose from 15 cents to 21 cents.

$ $ $

Integrated Software Systems Corp. has filed a registration statement with the Securities and Exchange Commission covering a proposed initial public offering of 1,401,500 shares of common stock.

Super Shorts

The IBM Personal Computer is now being marketed abroad in 16 countries throughout Europe, the Middle East and the Far East, IBM subsidiaries have announced. The Personal Computers sold abroad will be supported and serviced by local IBM marketing organizations and IBM product centers, as well as by selected Personal Computer dealers. Initial shipments of the Personal Computer will be made from IBM's manufacturing facility here, with subsequent production for Europe and the Middle East from the company's factory in Greenock, Scotland.

• • •

Wicat Systems, Inc. plans to market a new GSA-certified high-level Cobol compiler on a Motorola, Inc. 68000-based system.

• • •

Digital Equipment Corp. has signed an agreement with **Polygon Associates, Inc.** of St. Louis to market snd distribute Polygon's communications software, Poly-XFR, a file-transfer package that allows DEC's CP/M-based personal computers to communicate with other DEC computer systems and with non-DEC personal computers.

• • •

United Telecom Communications, Inc. will use **Micon Systems, Inc.**'s microprocessor-based packet assembler/disassembler as its standard means of connecting terminals to its Uninet service.

• • •

Hewlett-Packard Co. has established a service program that enables dealers to provide full hardware support for customers and allows customers to have increased local access to repair services. The service includes telephone technical assistance with specified response time.

• • •

Management Science America, Inc. (MSA) has selected four microcomputer hardware manufacturers — IBM, Hewlett-Packard Co., Zenith Data Systems Corp. and Epson America, Inc. — for a new MSA mainframe/microcomputer software line being introduced throughout 1983. The new product line will combine financial, human resource and manufacturing mainframe software with microcomputer software developed by MSA's subsidiary, Peachtree Software, Inc.

• • •

Corona Data Systems, Inc., manufacturer of IBM Personal Computer-compatible equipment, has signed a software licensing agreement with **Digital Research, Inc.** that will make Digital Research's CP/M-86 operating system and graphics extension available with Corona's 16-bit personal computer at no extra cost.

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Our newsweekly for microcomputer users provides timely information on the "who, what, where and when" of personal computing in business, home and education, written in easy-to-understand language. *InfoWorld* provides up-to-the-minute editorial coverage of new products, systems, techniques and applications in the fast-breaking, affordable personal computer field.

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Dear David;

Computer Advice Columnist: David Jamison Carlyle

Dear David,
Talk about a micro explosion! This company reads like a "who's who" of personal computer brands. And now I'm in the midst of everyone's purchase requisitions for printers. How many will I need? Can any printers give me both high speed and high quality? Who will service the mix I'm afraid I'll end up with? Am I going to have to open my own printer shop? I certainly hope not! Some suggestions, David, please.
Signed
Victim of the Micro Explosion

Dear Vic,
Don't despair! The answer to your predicament is as easy as DJC. They carry not only micros, but also the full range of peripherals to take advantage of all those computer adventurers you've got.

Just as DJC is the most trusted name in distribution for the astute corporation, Texas Instruments is known for solid reliability in printing. The TI 810 LQ, in-the-field-proven for many years, is the industry standard for medium speed matrix printing. But even better is its new dual mode option—draft at high speed with regular matrix quality, or slow down for very near letter quality. Two printers in one. Just what your micros need!

By the way, once you get the printer problem solved, I'm betting that you create another problem—even more demand for the micros! And when that happens, call DJC again. They carry a selection of microcomputers wide enough for any business application. But enough for now. Get those TI's and get those micros printing!

David

Dear David,
My company needs to tie thirty terminals to our large IBM system. but the MIS budget just can't afford that many 3278's. David, how do I tell ten division executives that they're the ones who won't be getting the automation they wanted? Some of them outrank me!
Signed
Dollars for Digits

Dear Digits,
You may not have to. But don't expect your traditional computer suppliers to come up with the answer.

DJC has a technical systems department that specializes in solving just your type of dilemma. Experienced hardware, software and communications specialists, together with applications-oriented field marketing experts, determine unique 'mixed vendor' solutions to tele- and data-communications demands on today's corporate computing resources.

Based on my experience, your company would probably do well with a fully IBM 3270-compatible network tying varied types of terminal equipment, suited to the needs of each workstation, to your mainframe. As a matter of fact, DJC has installed many such nationwide communications networks based on Protocol Computers Inc. protocol converters, which even allow dial-up access, graphics and dozens of different printers. In fact, PCI's protocol converters can even plug directly into the existing coaxial cable used by the IBM terminals. But call DJC. They can tell you for sure.

David

PS: They can also train all those executives for you!

Dear David,
What should I do? I am being bombarded by an army of reps, manufacturers and distributors, offering a vast array of computer terminals, microcomputers and communications equipment. The reps and manufacturers always seem to be pushing one particular solution. And the distributors don't seem to offer security, support or enough technical expertise. Please advise!
Signed
Purchasing Phobia

Dear Phobic,
Your points are well taken on both sides of the purchasing dilemma, so don't feel alone. The large manufacturers do have some typical 'big company' benefits, but they are usually slow on delivery and present only one solution. And so many new distributors have sprung up lately that one wonders what they can possibly offer the sophisticated corporation. It's certainly not support.

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David

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In every issue of *Computerworld OA*, you'll find articles on what's happening in all aspects of office automation. We'll keep you current on new technologies and trends while taking a closer look at key issue in our special section, OA Focus.

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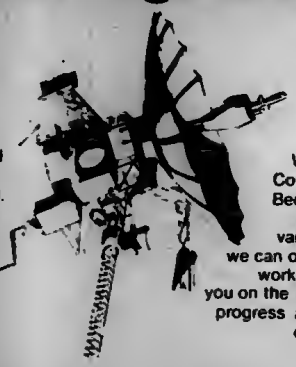

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DATA PROCESSING SYSTEMS ANALYST PROGRAMMER V

Central Washington University is currently seeking an experienced professional senior systems analyst or project leader. This person will be responsible for the analysis and programming of administrative information processing systems. This position will assist in the planning, organizing and controlling the work of other systems analysts/programmers.

Minimum Qualifications: One year of experience as a System Analyst/Programmer IV or equivalent; OR two years experience as a Systems Analyst/Programmer III or equivalent. DEC VAX and university administrative computing experience desirable.

Salary range is $2,060 - $2,883 per month.

Applications will be accepted until April 15, 1983. Contact Geraldine Hollon, Personnel & Benefits, Central Washington University, Ellensburg, WA 98926. (509) 963-1202.

EEO/AA/Title IX Institution

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At Financial Institution Services, a division of American Express Company, we're programming the future of financial transaction processing, 800# Telemarketing, Cash Management Service and Cable TV Billing Systems. You'll work with one of the world's largest commercial computer CPUs and have real opportunities for career growth in a stable, professional work climate. We need:

ON-LINE PROGRAMMERS: Minimum 2 years experience using BAL in a CICS (MACRO-level) OS environment. You will implement/maintain on-line operations, software relating to general finance reporting. Exposure to large IBM-compatible CPUs and peripherals a plus.

PROGRAMMER ANALYSTS: Minimum 3 years experience with a thorough knowledge of COBOL required. Exposure to BAL and OS preferred but not essential.

TEAM LEADERS: First line supervisory position in our new Cable TV Product area. Directly responsible for one or more sub-systems, manhour projects, cost estimates and the coordination of all projects through your team of 6-8 professionals. You'll need minimum of 4-5 years programming and analysis experience with an excellent working knowledge of COBOL, plus previous supervisory experience in a DP environment. Knowledge of IBM/OS/JCL necessary. Exceptional oral/written communication skills also necessary for continuing user contact at all levels.

Financial Institution Services offers a highly competitive salary and one of the DP industry's best benefit packages. You may be eligible for our special HIRING BONUS. (Not offered to agency-referred applicants.)

For immediate consideration, call Roger Stiles, TOLL-FREE, 800-228-9079. Or send your resume to him at this address:

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Entry Level SYSTEMS PROGRAMMER

Knowledge of IBM assembler language, 1-2 years programming experience or an equivalent combination of education and experience is required. Experience with IBM operating systems internals and/or TP software is preferred.

Salary commensurate with experience; position offers excellent growth potential. Interested candidates should apply to:

Diana Kirby
Sr. Systems Programmer

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Research Drive,
Durham, N.C. 27706
(919) 684-6566
AA/EOEmployer

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(918) 627-1600

SYSTEMS ANALYST

M.S. Computer Science and 1 1/2 years experience; will analyze, design and write business applications. Will plan and design input/output specifications for systems. Will design control systems for applications and data base integrities. Will supervise programmers. Must have knowledge of accounting and inventory systems; programming experience and fluency in systems 38 COBOL Data Base. $25,000 per year. Send resumes to: Atlanta Job Service Center, 1 Peachtree Street, Atlanta, GA 30303 Job Bank Order #73674.

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Engineering work is idea work. Your career can only go as far as your ideas. So if you're looking for a career where your ideas can go the distance, take a look at Parker Brothers. We want to put your ideas into every living room in America. And we can do it.

The future of video games and other electronic home game entertainment looks bright. Parker Brothers has made a major corporate and engineering commitment to that future. We're shooting for a large share of 1983's anticipated market of 80-90 million video game cartridges. And our outstanding success in 1982 — capturing $115 million in sales with only 4 game cartridges — should tell you just how successful we plan to be.

The Future in Video Games.

Game engineering is a significant challenge to your engineering talents. And even though we're not building missiles or mainframes, you'll need every ounce of your ingenuity and creativity to work here. Video game development is characterized by short product development cycles (about 6 months), hot competition, and quick-thinking solutions. There are no cookbooks for video games.

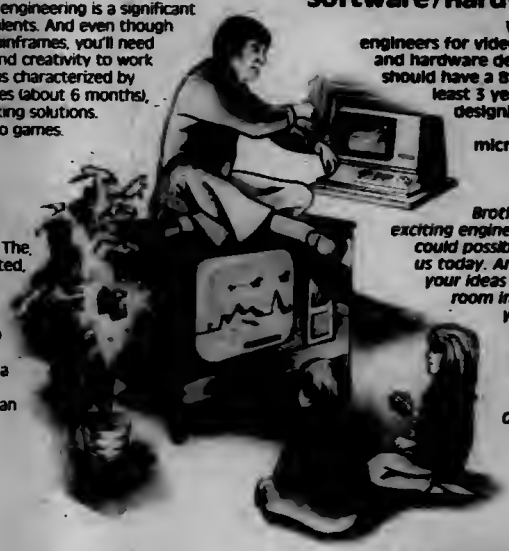
The Engineers Who Will Succeed.

Who succeeds as an engineer in this unusual new technology? The answer won't surprise you: talented, creative people who are willing to put something extra into their work. A recent article in *IEEE Spectrum*, describing video game designers, applies to every engineer we now seek: "It takes a rare blend of talent, an artistic sense, a feel for popular trends, an ear for sounds, and of course, engineering genius."
Still interested?

Where Are You Now?

Video game designers and other Parker Brothers game engineers work in the same technological environment as other state-of-the-art engineers. And they work on essentially the same problems: Packing more power into smaller spaces. Increasing resolution. Controlling cost. Maximizing quality. So consider the switch to Game Engineering at Parker Brothers. It may not really be a different kind of engineering. But it's sure to be a very different career.

Game Development— Software/Hardware



We seek talented engineers for video game software and hardware development. You should have a BSCS or EE with at least 3 years experience in designing fast, playable games or other microprocessor-based new products.

Come to Parker Brothers for the most exciting engineering career you could possibly have. Contact us today. And soon we'll put your ideas into every living room in America. Send your resume in confidence to Nancy Thibedeau, Dept. CW321, 50 Dunham Road, Beverly, MA 01915. Or phone 617-927-7600.

We are an equal opportunity employer M/F

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Send resumes to: Mary C. Scott, Recruiting Office, Ætna Life & Casualty, 900 Asylum Avenue, Hartford, CT 06156, (203) 273-3790. An equal opportunity/affirmative action employer.

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4331

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Mitsubishi Aircraft International Inc., has an immediate opening for a results-oriented Systems Software Analyst/Programmer. Position requires a Bachelor's degree and 3 - 6 years programming experience in COBOL and/or ALC. Experience should include 1 -3 years exposure to CICS and VTAM under DOS/VSE. Send inquiries to: Manager-Corporate Recruiting, Mitsubishi Aircraft International Inc., One Lincoln Centre, 5400 LBJ Freeway, Suite 1500, Dallas, Texas 75240. Applicants only, please.

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PRODUCT MANAGEMENT MANAGERS

Data Communications

Schedule confidential interviews at Interface
Mon. 3/21 through Wed. 3/23 10 AM-4 PM (305) 865-1500
Ask for Bill Dransfield or Jim Gulezian

Infotron Systems is implementing new long term product strategies. Technically experienced Product Managers can play an important role in our expansion.

Product Management Managers will be responsible for the overall product performance by assuring that all internal departments interact effectively in order that we can continue to deliver our quality products on a timely and cost efficient basis. You must possess both the technical ability as well as the management skills necessary to conduct product status meetings, become a problem solver on both a technical and marketing basis, plan, develop and cordinate new product and new feature releases, analyze design standardization programs, review product brochures and bulletins, and be able to lead, motivate, and direct the entire scope of internal operating departments involved in product manufacturing and marketing. A technical degree, proven marketing experience in a large Fortune 1000 Corporation, and the ability to bring product lines together is necessary for success in these positons.

If you are unable to visit with us during Interface, please send your resume, in complete confidence, to: Mr. William B. Dransfield, Director, Corporate Personnel Infotron Systems, Cherry Hill Industrial Center, Cherry Hill, New Jersey 08003.

ADDITIONAL OPPORTUNITIES EXIST FOR
experienced Sales Professionals and Software Engineers and Senior Field Service Representatives. Please send your resume to Mr. Dransfield at the address above.

We are an equal opportunity employer, M/F.

Infotron Systems

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Quite simply, that's what we offer our applicants: contact with the **FINEST** Companies in New England. Through years of specialization in EDP and Engineering placement, we have a broad base of industrial, insurance, banking, defense, and service clients with openings at every level, including:

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PROGRAMMER/ANALYSTS	TO 35K
GRAPHICS/SOFTWARE	TO 46K

Send resume or call toll free 1-800-628-3374 (in Massachusetts call (collect): 413-781-0982.

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If your assets combine proven technical capability with good communication and interpersonal skills, you can broaden your career into new areas with us.

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Become the resident Management Consultant in support of aggressive marketing activities in NEW JERSEY or CONNECTICUT or BOSTON.

Boeing Computer Services is one of the fastest growing computer services firms in the nation. It's an aggressive, high visibility environment in which your data processing experience can put you in a key role as part of our professional services thrust in any one of three major locations. To qualify as resident Management Consultant, you will need technical experience and a marketing orientation. In addition to the qualifications shown below, strongly developed written and oral skills are a prerequisite.

FOR NEW JERSEY:

You must be a senior DP person with at least 8 years' experience, including a strong operations research background, plus—

- Broad applications experience.
- At least 2 years' in project management.
- Familiarity with large-scale projects.

You will be working with the Branch Manager and Sales Marketing Staff, and could ultimately manage this Professional Services Group effort.

Boeing is currently working with a large communications organization on a national scale. You can expect to spend a good deal of your time in this environment.

FOR CONNECTICUT:

Requires 5 or more years' experience in data processing, with heavy experience in manufacturing and engineering systems, plus—

- MRP and Master Scheduling applications knowledge.
- Understanding of the made-to-order business.
- Proven record in project management.
- Understanding of Order Entry, Materials Management/Scheduling, Design Control and Purchasing.

FOR BOSTON:

You must be a senior DP professional with at least 8 years' experience, including project management, plus—

- Background in manufacturing applications and experience in developing large-scale projects.
- Understanding of Bill of Materials, Materials Management and Planning.
- Financial systems experience is an advantage.

As with the New Jersey opportunity, success could result in your assuming responsibility for this Professional Services Group effort.

For immediate consideration, please send your resume and salary requirements in confidence to Walter B. Sanderson III.

BCS BOEING COMPUTER SERVICES COMPANY
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7980 Gallows Court, Vienna, Virginia 22180

DENVER POSITIONS

Data Processing services organization located in the southeast metropolitan Denver area has openings for:

- Systems Programmers - Opportunities for persons with two or more years software internals experience with MVS, CICS, IMS DB/DC or DATACOM DC/DB.
- Information Systems - COBOL or PL/1 technical background with development experience in on-line, highly interactive data base oriented systems. DATACOM or IMS experience desirable. Junior through senior level positions available.
- Applications Specialists - MSA financial systems, including general ledger, payables, receivables. Openings at all levels for persons with experience in fully integrated systems, data entry through data management and reporting.

Persons qualified for any of the above positions are invited to send a resume and salary requirements in complete confidence to:

Employment Manager
P.O. Box 441171
Aurora, CO 80044

EOE M/F/H

We regret that we are not able to accept agency referrals.

VICE PRESIDENT - MIS

A large progressive financial institution located in the Midwest is seeking an individual to manage a sophisticated on-line MIS function. The organization's continued growth is closely tied to MIS support, making this a key position - offering a unique career challenge.

The ideal candidate must have a degree and a minimum of 10 - 12 years of data processing experience including 5 - 7 years of MIS management and an emphasis on the design, development and implementation of on-line financial institution applications. Banking experience coupled with IBM operating system environments (COBOL, MVS/CICS, DB2) is strongly preferred.

Responsibilities will include managing and coordinating the activities of 35 MIS support personnel in the development and implementation of state-of-the-art financial institution applications. The candidate will work closely with Senior Management and must have the ability to communicate effectively with Senior Management and major ME users.

Salary offer will be commensurate with your experience plus a competitive benefits package. Qualified candidates are encouraged to send a confidential resume, including references, salary history and requirements to:

CW-81113
Computerworld
Box 880, Framingham, MA 01701

COLORFUL COLORADO

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Programmer/Analyst Systems Analyst

Highly motivated, career oriented, data processing professionals are needed to work in a creative, challenging environment. Bachlors degree in computer science, math, business, or a related field preferred. 2 to 3 years experience in programming and systems analysis with emphasis on analysis. 1 year of programming mandatory. Starting salaries range from $22,364 to $25,296. If hired, applicant must reside in Weld County.

Technical environment: IBM 4341-2 using DOS/VSE with a large teleprocessing network using CICS/VS and DMS. COBOL knowledge preferred. System supports many different users.

OR ANY EQUIVALENT COMBINATION OF EDUCATION AND EXPERIENCE

Apply at Weld County Personnel Department, 915 10th Street, Greeley, CO 80631.

WELD COUNTY IS AN EOE/AA EMPLOYER, M/F

SOFTWARE SUPERVISOR

Join the management team of professionals directing the city/county joint computer facilities. Current environment: 4341-4, DOS/VSE, POWER/VS, CICS/VS, and VM. This is the lead position for the technical support group reporting to the director.

Responsibilities: Evaluation and selection of new software, assist management in selection of future hardware upgrades and resource management planning. Generation and maintenance of current software, technical support for applications and operations areas, and managing someone else of 3. Must have ability to communicate clearly with user groups and staffs in non-technical terms.

This challenging position requires a background in DOS/VSE operating systems and CICS communication networks, a degree or equivalent work experience, current working knowledge of ASSEMBLER, ANS COBOL, and experience with VSAM, VM, and CICS. At least 5 years current work experience in software. Supervisory experience is helpful.

Progressive growth organization, plus the opportunity to live in the beautiful pacific northwest. Excellent fringe benefits. Salary based on experience.

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Pieces of our mind. Part three.

There is only one way to explore the multi-dimensional array of opportunities being generated continuously at Ford Aerospace in the BWI area of Maryland— by direct interaction with our leaders who are contributing to the implementation of our high technology capabilities.

The inputs from three department managers are briefly summarized below. If you sense the more profound opportunities implied by their remarks, call or write so that we can arrange open, face-to-face discussions at your earliest convenience.

We are in a vigorous growth mode. Our newly constructed, second building at BWI is 80,000 square feet of the latest, tangible evidence. Yet this was an 18-person start-up operation of WDL as recently as 1980. By 1982 our numbers surpassed 200, and we are now where we expected to be by 1985. Our technology and systems development orientation has brought us world-wide responsibilities. And the pace is quickening.

U.S. citizenship is required for all positions.

Very few Systems Engineers have enough interdisciplinary command to handle systems this large, often on a "bottoms up" basis!

You're not likely to find yourself doing two-of-a-kind systems here. You'll be starting with relatively large systems in themselves, yet they will become only portions of a much larger system. The programs call for high level systems engineers with experience in local area networks, packet switching networks, familiarity with the X.25, the new X.75, or even the older RS232 protocols, and knowledge of the DEC or SEL computer families.

The size and complexity of the programs demand the very highest systems integration skills— individuals with the ability to cut through what may appear to be conflicting approaches and home in on the commonalities that lead to successful interoperability... all this in a real-world that sometimes demands bottoms-up creation of specifications "by inference" as you evaluate and bring together a vast number of independently developed system elements.

Our "Chief Programmer Teams" make huge software systems solvable. They also boost people to leadership "before their time."

Some very challenging work involving SEL computers calls for individuals with a depth of experience with the hardware, with the MPX operating system, with the IOP, and knowledge of the X.25 protocol. Related activities (and opportunities) encompass PDP-11's under RSX 11M and VAX 11/780's. Advanced degrees and up to 10 years of dynamic experience in software systems engineering are appropriate qualifications. FORTRAN programmers with structured programming experience on any of the three machines are also in great demand here.

What's perhaps most exciting about the challenges in this group is that your leading associates are acknowledged heavyweights who have been closely involved with the architecture and development of advanced hardware and software. They are looking forward to sharing their experience in meeting leading edge challenges of the defense community with like-minded individuals.

Integration and testing of large electronic systems

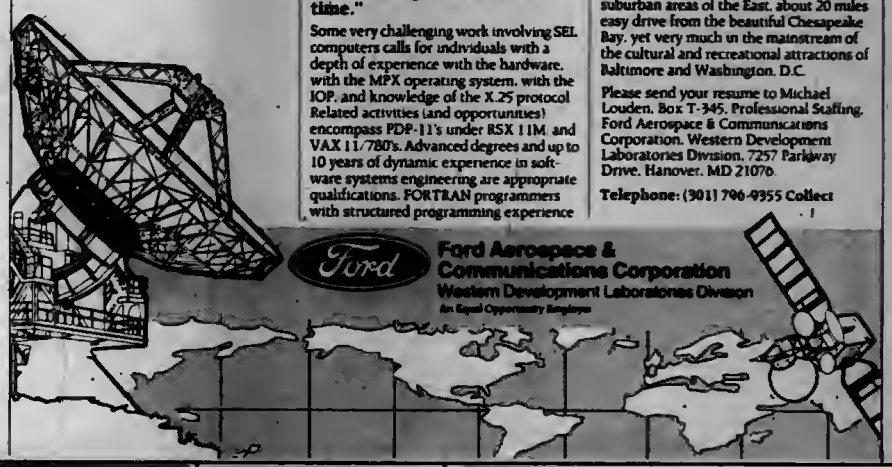
Openings are plentiful for hard-driving, dynamic engineers who enjoy being placed in a challenging and often frustrating postion. You will be responsible for physical integration and functional performance validation. Integration plans, test plans, test procedures, test conduct, and test reports are part of the challenge.

A word about the Ford Aerospace operation in the Baltimore/Washington Corridor.

If joining us means relocating, company assistance will be available; and you will find yourself in one of the most desirable suburban areas of the East, about 20 miles easy drive from the beautiful Chesapeake Bay, yet very much in the mainstream of the cultural and recreational attractions of Baltimore and Washington, D.C.

Please send your resume to Michael Louden, Box T-345, Professional Staffing, Ford Aerospace & Communications Corporation, Western Development Laboratories Division, 7257 Parkway Drive, Hanover, MD 21076.

Telephone: (301) 796-9355 Collect



Ford Aerospace & Communications Corporation
Western Development Laboratories Division
An Equal Opportunity Employer

SOFTWARE ENGINEERS

Development Opportunities For

MVS EXPERTS

Our current need is for software engineers in a new product development. Your primary responsibilities will include the design and implementation of data management services and user access methods for optical storage system.

The ideal candidates will be knowledgeable in MVS architecture, proficient in 370 assembler language, and have direct experience with MVS internals. Openings exist in all levels.

UNIX PROGRAMMERS

You will be a member of a design team writing software testing, create test automation facilities, and data base software. You must have a solid working knowledge of UNIX, C and shell programming. Knowledge of internals and TP desirable. BS in Computer Science or equivalent and a minimum of two years engineering experience is preferred.

For immediate consideration, please send your resume to CW-84111, Computerworld, Box 880, Framingham MA 01701.

SOFTWARE PROFESSIONALS

Program Resources, Incorporated, Annapolis, Maryland life science consulting firm, is looking for qualified individuals to be part of the toxicology system development effort at the National Center for Toxicological Research (NCTR) in Jefferson, Arkansas. System environment includes: IBM 4341 OS/VS1, VM, CMS, ADABAS, Complete, and Natural. Modcomp mini computers running on-line data collection systems to be replaced by VAX 780 BASED standalone data collection terminals.

Application Software Manager - Real time mini applications and mainframe DBMS experience a plus. High 30K range DOE.

DBA Staff Members - DBMS on IBM with OS experience required. ADABAS experience a plus. 30K range DOE.

Programmer/Analyst - 2 plus years in OS environment desired. ADABAS experience a plus. 30K range DOE.

DBC On-Line Data Collection System Designer - Scientific applications and VAX experience preferred. 30K range DOE.

To apply, send resume to Program Resources, Inc., P.O. Box 183, Jefferson, AR 72079. Principals Only.

DYNAMAC CORPORATION

INFORMATION AND MANAGEMENT SYSTEMS DIVISION

IMMEDIATE OPENINGS - $50K

UNIVAC 1100 or TANDEM

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  Development - Design - Implementation
- **DATA BASE ADMINISTRATORS**
  Development - Design - Implementation
- **HARDWARE/SOFTWARE SPECIALISTS**
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- **COMPUTER SPECIALISTS**
  Structured Analysis - Structured Design
- **PROGRAMMERS -- COBOL**
  Implementation - Maintenance

Positions are located in Lexington Park, Maryland (90 miles southeast of Washington, D.C.) on the shores of the Chesapeake Bay.

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For more information – Call Susan COLLECT
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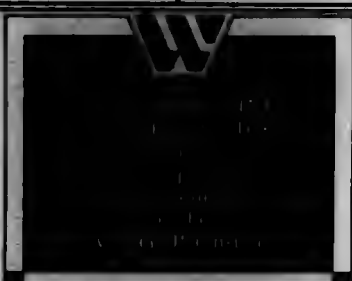
Send Resume Specifying Position To:
Personnel Director
FAX Number
DYNAMAC CORPORATION
11140 Rockville Pike
Rockville, MD 20852



Whittaker, a leading international health care contractor, has immediate openings for qualified computer professionals. These positions offer excellent salaries, tax advantages for eligible U.S. citizens, and an extensive benefit package.

Manager-Data Processing: Responsibilities include managing data processing activities; setting overall department objectives, developing and implementing data processing requirements for administrative divisions; planning hardware development for future needs; supervising all training within the department and setting and maintaining professional standards of work and documentation.

You must have a Bachelor's degree in Computer Science or similar field; 8-10 years data processing experience (2 as data processing manager or project leader, plus 3 in programming/systems analysis); familiarity with major commercial applications including general ledger, payroll, personnel and materials systems; experience with IBM 370 or 4300 hardware (DOS). (COBOL required, RPGII preferred).

Realtime Systems Engineers: Responsibilities include participation in developing, enhancing and maintaining software, and training programs for Saudi Arabian trainees.

You must have 3 years experience in software development; proficiency in assembly language programming, and be able to communicate in writing and verbally to all levels of personnel.

NOTE: Other fine openings at this time include Programmer Analysts and Systems Analysts.

Respond, outlining your experience, education and salary history to: John Phillips, Box 12028, Whittaker International Services Co., Arlington VA 22209.

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Whittaker

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IBM SOFTWARE SUPPORT SPECIALIST FOR ASSIGNMENT IN GERMANY

Our client located in the Southern West Germany area is looking for a high caliber individual to lead technical support functions for IBM's MVS and VM system software.

You should have:
- Experience in MVS system programming and generation
- Practical experience in installation and maintenance of software
- At least 5 years experience as a team leader
- Co-operativeness and a sense for communication

The right candidate will not only have the professional experience, but also be willing to undergo further training, and as well have the ability to work as a leader of a team of highly experienced MVS and VM specialists.

Salary offerings are competitive and relocation assistance is provided. If you are ready to make a three years commitment, send resume in confidence to our Steinbach Vollmer-Agency (code CS10) or Phone Mrs. Steidl who will be pleased to give you any information you may desire.

Steinbach & Vollmer GmbH
Personalberatung

D-8000 Muenchen 80, Neherstr. 1 Germany
Phone: 0114989-4705087, Telex: (Germany) 5216445
PP430.3

FT. WORTH

IBM SOFTWARE SPECIALISTS

Our Texas clients have several openings for software personnel with MVS, VSE, CICS, IMS, Program Products, Tuning or Capacity Planning experience. Salaries to $40K.

Suite 911 One Summit Ave
Ft Worth TX 76102 (817)336-4565

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DALLAS

SR. SOFTWARE ENGINEERS

Full interview, reloc., and fee pd. for large scale IBM system pro's. VT/AMICP, MVS/JES2, and fast growing state co. in suburban Dallas. If you are considering a move to Dallas, this is the ultimate situation. Salary open, D.O.E. Contact us to find out more.

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DATA PROCESSING CAREERS

MIS CONSULTANTS

EDP Specialists Needed Nationwide To Become Consultants

Major consulting firms need consultants at staff, Senior Consultant and Manager level in major cities nationwide. If you have outstanding technical and interpersonal skills, you can move into consulting NOW. A consulting career offers unparalled professional challenge, variety, exposure, rapid advancement, travel and excellent compensation.

Qualified candidates need 2-8 years experience with large mainframes or minicomputers as programmer, systems analyst, project leader or EDP auditor. Degree required; MBA a plus. Excellent communication skills, good business image and flexibility to adapt to a variety of situations are necessary.

Starting salary $26,000 to $45,000; rapid promotion and salary advancement.

Send resume to CONSULTANT RECRUITERS.
Reply to CW-84109
Computerworld
Box 880
Framingham, MA 01701

Immediate Opening
DATA PROCESSING MANAGER (Systems Programming)
Salary $2,972 per month

Plans, coordinates, supervises and manages the operations of a data processing technical support division including systems programming, computer operations, interagency services and records management. Position requires a Bachelor's degree in data processing, computer science or other directly related field to data processing, plus, 5 years of professional level data processing experience including at least 3 years of systems programming experience and 1 years of supervisory experience. County application must be in personnel by 5 pm on 3/31/83. Personnel Department, Room 119, Snohomish County Courthouse, Everett, WA 98201 (425) 259-2642. EOE

PROGRAMMER/ ANALYST

Florida Opportunity

You will work with a diversity of information and be engaged in all facets of system analysis and programming. This is not a crisis-oriented shop, but rather one that puts emphasis on the quality of the product. We offer state-of-the-art technology as evidenced in the recent installation of an IBM 4341

Our requirements are: Associate Degree with minimum of 2 years experience including IBM System 370, CICS, COBOL language with hospital experience preferred.

Outstanding salary and benefits. Send resume in confidence to Jan Stair, Professional Staffing, P.O. Box 4227, Tampa, FL 33677 EOE.

People Caring for Life

St. Joseph's Hospital

FACULTY POSITION IN DATA PROCESSING
Allegany Community College

Allegany Community College, a comprehensive public community college located in beautiful Western Maryland, invites applications for a tenure-track faculty position in data processing. The position is effective for the Fall Semester, 1983 (starting date: August 15, 1983).

Bachelor's degree in Computer Science or related field required. Master's degree and above preferred. Work experience in data processing/computer science area and/or teaching experience desirable. Experience in COBOL language preferred.

Rank is dependent upon education and experience. Salary ranges for a 9-month contract are: Associate Professor $17,870 - 21,970; Assistant Professor $15,280 - 20,790; Instructor $11,920 - 17,460. Summer and overload teaching available. An attractive fringe benefit program is provided.

Applicants should submit a letter of interest, a current resume with the names, addresses, and telephone numbers of three employment references to Mrs. Rhonda K. Layman, Personnel Officer, Allegany Community College, Willow Brook Rd., Cumberland, Maryland 21502. Deadline for receipt of all applications for the position is March 30, 1983.

Allegany Community College is an equal opportunity/affirmative action employer.

STATE OF WYOMING PROGRAMMER/ANALYST

Programs the solutions of data systems under development, documents programs and test systems. Position is located in Casper, WY. Previous programmer/analyst experience with Employment Security Commission would be helpful. Salary Range per month $1601 to $2036. Minimum 4 or more years experience. State of Wyoming is an Equal Opportunity Employer. Send resume to: State of Wyoming, Data Services Division, 949 South Center, Casper, WY 82601, Attn: Bob Haren, closes 3/31/83

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Data Processing

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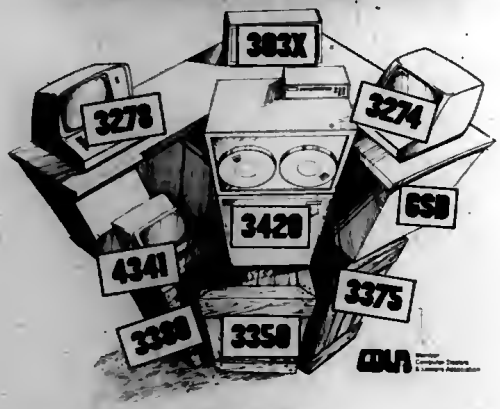

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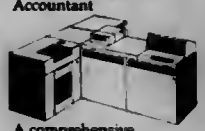

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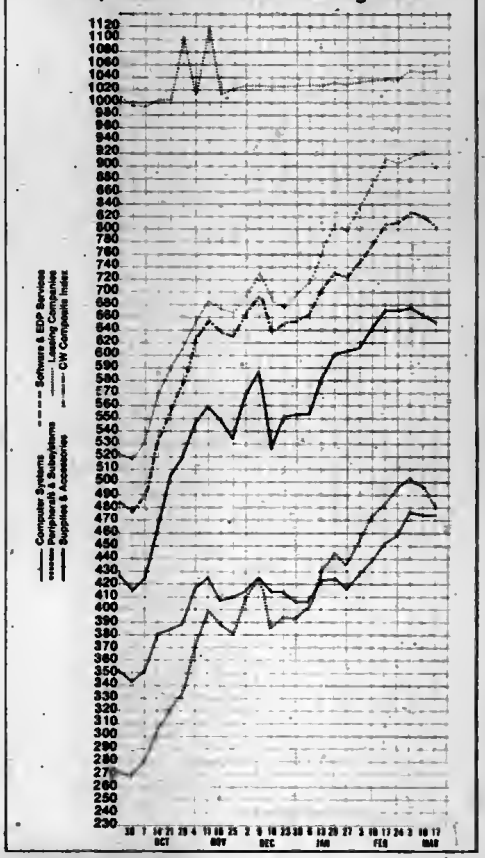

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MARCH 16, 1983

All statistics compiled computed and formatted by TRADE QUOTES INC. Cambridge Mass 02139

COMPUTER SYSTEMS

		1982-83 RANGE (1)	CLOSE MAR 16 1983	WEEK NET CHNGE	WEEK PCT CHNGE
A	AMDAHL CORP	17- 44	38 1/8	+ 1/4	-0.8
B	BURROUGHS CORP	28- 48	45 1/2	+ 1/2	+1.0
D	COMPUTER AUTOMATION	7- 17	14 3/4	- 1/2	-3.2
B	CONTROL DATA CORP	21- 61	47 1/8	+1 7/8	-3.8
N	CRAY RESEARCH INC	20- 48	41 1/4	- 7/8	+2.0
N	DATA GENERAL CORP	20- 61	38 7/8	+1 3/8	-7.8
N	DATAPOINT CORP	10- 37	22 3/8	- 1/8	-0.8
N	DIGITAL EQUIPMENT	82-132	125 1/2	+4 5/8	-3.8
A	EECO INC	8- 18	11 1/8	- 3/8	-3.3
B	ELECTRONIC ASSOC.	8- 12	9 3/8	- 5/8	-6.2
N	FLOATING POINT SYST	16- 37	33 1/2	-1 1/2	-4.8
B	FOXBORO	22- 43	39 1/2	- 5/8	-1.8
D	FULCRUM COMP CRP	1- 3	1/4	0	0.0
D	GENERAL AUTOMATION	3- 8	3/8	- 5/8	-5.0
B	HARRIS CORP	20- 61	44 1/4	+1 5/8	-3.5
N	HEWLETT-PACKARD CO	28- 87	30 5/8	- 5/8	-0.4
B	HONEYWELL INC	30-104	84 1/2	+ 1/8	-0.1
N	IBM	97-163	38 7/8	-3 3/8	-3.3
D	IPL SYSTEMS INC	5- 11	8	- 3/4	-8.6
B	MAGNUSON COMP SYSTS	2- 8	3	- 0	0.0
N	MANAGEMENT ASSIST	7- 18	10 5/8	+1	-9.8
D	MINI-COMPUTER SYST	1- 2	1	+ 5/8	+60.0
N	MODULAR COMPUTER SYS	6- 18	11 5/8	- 5/8	-3.1
N	MOHAWK DATA SCI	10- 18	18 1/2	- 1/2	-2.1
N	NCR	38-108	105 1/2	+1 3/4	+1.8
N	PERKIN-ELMER	17- 53	29 1/2	+2 1/4	-7.0
N	PRIME COMPUTER INC	10- 48	38 3/4	-2 1/8	-5.0
B	SPERRY CORP	21- 38	34 1/8	-1 1/2	-4.2
D	TANDEM COMPUTERS INC	16- 34	22 3/4	+1 5/8	-6.8
B	TEXAS INSTRUMENTS	71-175	161	+3 7/8	+1.1
D	WANG LABS "B"	13- 37	21	-2 1/4	-9.7
B	WANG LABS "C"	11- 37	31	-2 1/2	-7.4

LEASING COMPANIES

D	BOOTHE FINANCIAL CP	22- 39	32 1/4	0	0.0
N	CONSILCO INC	7- 39	22 7/8	-3 3/8	-12.8
B	COMMERCE GROUP CORP	1- 1	1/4	0	0.0
D	COMPUTER INVSTRS GRP	1- 2	1/2	0	0.0
B	CONTINENTAL INFO SYS	9- 21	20	+ 1/2	+2.6
N	DPF INC	8- 14	12	- 5/8	-3.0
B	ITEL	1- 8	1	+ 1/4	+33.3
B	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 41	40	- 1/8	-0.3

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON; I=NATIONAL; R=DIDNEOT; O=OVER-THE-COUNTER

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID

(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES

		1982-83 RANGE (1)	CLOSE MAR 16 1982	WEEK NET CHNGE	WEEK PCT CHNGE
D	ADVANCED COMP TECH	1- 4	4	+ 1/4	-0.8
B	ADVANCED SYSTEMS INC	8- 24	21	+1 1/2	-6.8
D	ADS COMPUTER INC	7- 22	18 1/4	- 3/4	-0.8
N	ANACOMP INC	8- 22	19 1/2	+1 1/4	-0.8
N	ANALYSTS INTL CORP	5- 8	8	+ 1/4	+2.8
A	APPLIED DATA RES.	10- NO	NO 1/8	+ 1/2	+1.0
B	ASK COMPUTER SYSTEMS	12- 28	28 1/2	0	0.0
B	AUTRADYNE CORP IND	1- 6	3 3/4	- 3/4	-16.8
N	AUTOMATIC DATA PROC	21- 60	38 1/2	-2 1/2	-6.4
B	BGA COMPUTER ASSOC.	8- 14	14 1/4	+	+1.8
B	BOTTOMLINE COMP INT'L	12- 47	40 1/4	+2 3/4	-6.9
D	COMPUTER HORIZONS	3- 12	11 1/2	+ 1/2	+4.8
D	COMPUTER NETWORK	4- 10	7 7/8	- 5/8	+7.3
B	COMPUTER SCIENCES	11- 23	18 7/8	+1 1/2	-7.8
B	COMPUTER TASK GROUP	8- 19	18 1/2	+ 3/4	-4.2
D	COMPUTER USAGE	2- 22	18 1/2	-1 1/4	-6.4
B	COMPUTONE SYSTEMS	15- 38	31	+ 1/4	+0.8
B	CONSERV CORP	11- 20	18 1/4	+1	-8.7
D	COMSHARE	8- 18	11 1/2	-1 3/8	+10.8
B	CULLINET SOFTWARE	13- 39	38 3/4	-2 1/4	-5.8
D	CYCARE SYSTEMS INC	9- 18	18 3/8	- 7/8	-4.7
B	DATA DIMENSIONS INC	1- 2	1/4	0	0.0
B	DATATAB	8- 2	8/4	0	0.0
B	DYATRON CORP	3- 4	3 1/2	0	0.0
B	ELECTRONIC DATA SYST	18- 38	38	+2	+5.5
D	INFORMATICS INC	10- 28	27 1/2	+ 1/4	+0.8
D	INSYTE CORP	1- 3	1 7/8	0	0.0
D	IPS COMPUTER MARKET.	1- 2	1 1/8	0	0.0
D	KEANE ASSOCIATES	4- 8	7 1/2	0	0.0
A	LOGICON	13- 39	38 1/4	+1	+2.8
D	MAST SCI AMER INC	5- 20	22	0	0.0
B	MATHEMATICA INC	12- 22	18 1/4	- 3/4	-6.8
B	MATHEMATICAL APP GRP	12- 22	18 1/2	-0	-6.8
D	NATIONAL DATA CORP	8- 24	21	- 1/4	-1.1
B	PANSOPHIC SYSTEMS	8- 29	23 1/2	- 1/8	-6.8
N	PLANNING RESEARCH	8- 18	13 7/8	-1 1/8	-7.8
D	PROGRAMMING & SYS	1- 4	3 1/2	+ 1/8	+3.7
D	REYNOLDS & REYNOLD	17- 38	38 1/4	-1 1/4	-3.2
D	SEI CORP	11- 29	21 1/2	-2	-8.8
D	SHARED MEDICAL SYST	13- 38	31	-1 1/2	-4.8
D	SCIENTIFIC COMPUTERS	8- 13	12 1/2	0	0.0
D	SOFTWARE AG	8- 17	8 1/4	-1	-8.7
B	TYMSHARE INC	12- 30	22 5/8	-1 1/8	-4.7
A	URS CORP	9- 14	12 3/4	-1 1/2	-10.8
N	WYLY CORP	7- 13	11 3/4	- 5/8	-5.0

PERIPHERALS & SUBSYSTEMS

P	AM INTERNATIONAL	2- 4	3 3/8	- 1/4	-6.8
A	ANDERSON JACOBSON	8- 20	18	-1	-5.2
D	AUTO-TROL TECHNOLOGY	8- 21	15	-2	-11.7
D	BANCTEC INC	7- 33	18 3/4	+ 3/4	+4.8
B	BEEHIVE INT'L	4- 11	10 1/4	-1	-8.8
B	BOLT-BERANEK & NEW	18- 40	38	-1 3/4	-4.7
B	CANRAD CORP	2- 4	3	- 1/8	-5.8
B	CENTRONICS DATA CORP	8- 20	17 3/8	-1 7/8	-9.8
N	CETEC CORP	4- 8	7 7/8	- 1/8	-1.8
D	CONRITRONICS	2- 16	11 5/8	-1 1/2	-11.4
D	COMPUTER COMMUN.	1- 2	1 3/8	0	0.0
D	COMPUTER CONSOLES	18- 44	38 3/8	- 3/4	-1.8
B	COMPUTER DEVICES INC	4- 21	18 5/8	-1 3/8	-6.1
D	COMPUTER TRANSCEIVER	4- 8	8 5/8	+1	+18.8
D	COMPUTERVISION CORP	19- 45	35 3/4	-3 5/8	-8.3
N	COMRAC CORP	31- 38	31	-1 7/8	-8.7
A	DATA ACCESS SYSTEMS	1- 0	1 1/2	0	0.0
A	DATAPRODUCTS CORP	8- 21	20	+1 1/4	+6.7
A	DATARAM CORP	8- 12	11 1/4	- 1/8	-1.1
B	DATRON INC	2- 11	8 3/4	- 5/4	-7.1
D	DAVID JAMISON CARLYL	3- 4	3 1/4	- 5/8	-8.8
B	DECISION DATA COMPUT	2- 14	10 5/8	-1 1/4	-10.4
D	DELTA DATA SYSTEMS	1- 4	3 1/8	- 1/8	-3.8
N	ELECTRONIC M & M	5- 8	8	+ 1/2	-5.8
D	EVANS & SUTHERLAND	18- 32	31 3/4	+ 1/4	+0.8
D	GANDALF TECHNOLOGIES	10- 22	19 3/8	+ 1/8	+0.7
N	GEN'L DATA COMM IND	8- 18	18 5/8	-1	-5.0
D	GENERAL TERMINAL CP	0- 2	3/4	- 1/8	-20.8
D	GREAT SOUTHWEST INS	2- 8	3	+ 1/2	+20.8
N	HAZELTINE CORP	22- 58	57 7/8	+1 1/4	+2.2
D	ICOT CORP	3- 10	7 5/8	- 1/4	-3.1
D	INFORMATION INTL INC	10- 22	18 3/4	- 1/2	-2.6
D	INTEL CORP	21- 67	67 1/4	+4	+6.3
D	IPL SYSTEMS INC	5- 11	8	- 3/4	-8.8
A	LUNDY ELECTRONICS	7- 18	13	-1 1/2	-10.3
A	NBI DATA CORP	14- 38	18 7/8	+ 1/4	+1.3
D	NETWORK SYSTEMS CORP	15- 32	30 1/4	+ 1/8	-0.8
D	ONEX	3- 8	8 1/2	0	0.0
B	PARADYNE CORP	24- 81	68 1/2	+ 1/4	-0.8
A	PERKIL CORP	7- 18	12 1/2	- 1/8	-0.8
D	QANTEX CORP	12- 28	21 3/4	-1 5/8	-7.4
N	RECOGNITION EQUIP	4- 13	10 1/4	- 1/2	-4.6
D	SCRA DATA	1- 8	1 5/8	0	0.0
N	STORAGE TECHNOLOGY	18- 33	21 5/8	-2	-8.4
B	SYKES DATATRONICS	6- 17	8 3/8	- 1/2	-5.8
A	T BAR INC	7- 14	12	- 1/4	-2.0
A	TEC INC	6- 12	8 1/8	- 3/8	-4.4
N	TEKTRONIX INC	34- 73	38 1/4	-1 3/8	-1.8
B	TELEX	8- 23	23	-1 5/8	-9.8
D	TESDATA SYSTEMS CP	3- 10	8 1/8	- 1/4	-2.8
B	TIMEPLEX INC	7- 24	20 1/8	+2	+11.0
D	VISUAL TECHNOLOGY	8- 20	18 1/2	- 1/4	-1.2
B	WILTEK INC	1- 8	2 7/8	0	0.0

SUPPLIES & ACCESSORIES

N	AMERICAN BUS PRODS	11- 22	20 5/8	-1	-4.8
B	BALTIMORE BUS FORMS	1- 0	1	0	0.0
N	BARRY WRIGHT	13- 23	20	+ 3/4	+8.8
D	CYBERNETICS INC	1- 1	1 1/4	- 1/8	-8.8
A	DUPLEX PRODUCTS INC	17- 21	20 1/2	+ 1/2	+2.8
B	ENNIS BUS. FORMS	18- 32	31 1/2	+2	+6.7
N	3M COMPANY	48- 82	72	-2	-2.8
B	MOORE CORP LTD	28- 47	NO 3/4	+1 1/2	+3.3
N	NASHUA CORP	8- 18	13 7/8	+ 1/4	-1.7
D	STANDARD REGISTER	30- 88	83	0	0.0
A	TNS PRODUCTS CO	8- 23	22 3/4	+1 1/4	-0.8
B	WALLACE BUS FORMS	22- 38	32 1/2	-1 1/8	-3.8

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